The Builder.

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*Derbyshire.**

"CAN assure you," wrote Lord Byron, "there are things in Derbyshire as noble as Greece or Switzerland." And "He that has seen Dovedale has no need to visit the Highlands," said Dr. Johnson, rapturously. There would be no need to indorse these opinions if they related to unknown land, and there must be still less occasion when they are expressed in relation to places the artist's pencil, the engraver's burin, and the pen of the ready writer, have made familiar to every one. We have, moreover, only recently, given our readers a series of "Out and About" sketches of the principal places of interest in Derbyshire.† But we have now to notice two new guides, one of which sets out to conduct us through four counties, and the other limits our wanderings to a radius of a few miles round Matlock Bath; and in the course of this pleasant task we may have to go over the ground concerning which Byron and Johnson wrote in these glowing terms. We do not intend to follow our Murray through Derbyshire, Notts, Leicester, and Stafford, but rather to walk through the principal seats in the first-mentioned county with the two guides in hand, comparing one with the other.

We take Chatsworth first. Bright and sparkling it rises before us, a white stone palace with wings and towers and terraces on a green smooth site of sward. This same sward is part of a fine deer park some eleven miles in circumference, and through it, at a little distance before the palace, winds the river Derwent. The first view is so peaceful that it is difficult to realise there could have been a "year of sorrow" here, though we know, in truth, there has been, and more than one. We pass swiftly through the corridor that leads to the great hall, shining with polished Derbyshire marbles, and thence to the chapel, where are some of the clever wood carvings that are never to be forgotten by those who have once seen them. We come to a standstill here, because we wish to ask Mr. Murray why he ascribes these carvings to Grinling Gibbons, without, however, bringing forward any proof that they are his work. In this matter he simply follows Walpole, quoting the paragraph from his "Anecdotes of Painting" that have misled so many. Mr. Hicklin, the author of the more strictly local guide, properly assigns the work to Samuel Watson, who, jointly with Lobb and Davies, was engaged to execute the ornaments of the state apartments. We cannot reject the testimony of the epitaph in Heanor Church, which would never have claimed the carvings at Chatsworth as the work of Watson if they had been executed by Gibbons:—

> "Watson is gone, whose skilful art display'd
> To the very life whatever nature made:
> View but his wondrous works in Chatsworth Hall,
> Which are so gazed at and admired by all.
> You'll say 'tis pity he should hidden be,
> And nothing said to revive his memory.
> My mournful friends, forbear your tears,
> For I shall rise when Christ appears."

Honour to whom honour is due. Mr. Hicklin says further:—

> "Lord Orford was misinformed when he spoke of Watson as a pupil of Gibbons, who assisted him chiefly at Chatsworth. It appears that he worked under Young, and afterwards on his own account: his price for daywork was 3s. 10d. a day. It is on record that his grandson, Mr. White Watson, of Bakewell, stated that he was a pupil of Mr. Charles Oakey, carver in the parish of St. Martin's-in-the-fields, London. There is some of his work in that portion of the State apartments which is now the library, for which he was paid, in 1703, 114*l.* for ornaments of the great frieze over the doors, cyphers, coronets, &c. He carved also twenty-two heads, for the galleries in the inner courts; and for which, and six vases, he was paid 107*l.* 10*s.*; in 1704 he was paid 112*l.* 16*s.* for similar work."

The auditor's accounts show that some cases of carved work, statues, and pictures came from London during the progress of the works, the carriage of which cost 14*l.* 15*s.*; but there is no other entry on them that can possibly be construed into any indication that Gibbons was employed. We quote Mr. Hicklin again:—

> "The name of Thomas Young, who was certainly during three years the principal carver in wood, is not mentioned by Lord Orford, nor those of Lobb, Davies, or Lanscroon; the latter, or a person of that name, is mentioned as a painter. The slight mention that is made of Watson is erroneous. It is remarkable that no writer, before Lord Orford published his 'Anecdotes of Painting,' ever spoke of the works of Gibbons at Chatsworth. Dr. Leigh, who gave a particular description of Chatsworth in 1700, soon after all the principal apartments were finished, speaks of the works of Verrio, but makes no mention of Gibbons; nor does Dr. Kennet, when describing Chatsworth in his 'Memoirs of the Family of Cavendish.' J. Mackay, who published 'A Tour through England' (the result of actual observation) in 1724, quotes Leigh, and makes no mention of Gibbons, which seems to intimate that the carving was not then shown as his work."

Until there is evidence that the auditor has curiously overlooked Gibbons, from the fact, perhaps, that his work may have been included in some contractor's estimate, or that the cases mentioned above actually contained work from his hand, we must conclude that it was the imagination of Lord Orford that brought him to Chatsworth, and transferred to him the credit that is due to Young, Watson, and other members of the same staff. We must add, that Mr. Murray quotes the epitaph on Watson in his notice of Heanor Church.

We turn to Haddon Hall. All is grey and quiet here. There is a river flowing through the meads around, but it is not the same stream that Chatsworth looks upon. It is the Wye. Grey, sedate, full of shadows, but sunshiny withal, is the deserted hall of the Vernons. An impression of enchantment pervades the place. The gazer feels, as the guide conducts him from chamber to chamber, that the opening of the next door may usher him into the presence of the company that thronged the place three centuries ago. But there are no footfalls, no voices, no clattering of horses' hoofs in the courts without, no baying of dogs: all is still; although there are the antique pewter-platters looking as though they were only used yesterday. Hanging on the wall, in the first room entered, are huge jackboots, spurs, a leather doublet, a hunting-horn, a matchlock, as though their owner were close at hand; and here is the oaken cradle in which once lay and crowed the first Duke of Rutland. Nothing is stirring save the foliage without; nothing altering its outlines but the slow shadows. Mr. Hicklin mentions, on the authority of rumour only, we perceive, that Mrs. Radcliffe frequently spent the night here when writing her "Mysteries of Udolpho," and desirous of intensifying her powers of descriptive romance. Both guides take us through the building in the same way as that pursued by the custodian of the keys. Here are the low entrance-gates, with their well-worn steps, the chaplain's room, and the chapel, with its open timber roof, music-gallery, and long oaken benches. Coming back into the grey courtyard again, we are ushered into the banqueting-hall, where we may see how a great dinner was served and partaken of in the days of yore; see the raised floor where the lord sat, with his principal guests above the salt, while his dependants ranged themselves on either side of the table below the salt; the iron hook in the wall to which a man's wrist was tied, while cold water was poured down his sleeve, if he would not conform to the rules of the house; the hatch through which the trenchers were handed; the broad shelf on the half-door or hatch of the kitchen close by, on which the cooks placed their dishes, whence the servingmen could carry them up a sloping passage to the hall, and place them on the table. Further on, opening out of a passage from the banqueting-hall, is the oak-panelled dining-room, some of the knotted carvings of which we figured in these pages, with its chimney-piece inscribed "Drede God and honor the Kyng," and fine oriel; and after ascending the grand staircase we are shown the large, light, empty drawing-room above this, which is hung with tapestry, though otherwise unfurnished; and the long oak-panelled and oak-floored gallery, which extends along the south front of the hall for 109 ft. 9 in., and has a recess, as large as a modern chamber, 15 ft. by 12 ft., in the centre of the south side; thence to the ante-room of the state bedchamber, where behind the tapestry are folding-doors opening on the steps of the upper garden terrace, and then into the chief sleeping-apartment, the walls of which are also covered with tapestry, and in which stands the state-bed, the green velvet curtains of which are believed to have been embroidered by the wife of Sir Robert Manners, in the reign of Henry VI.

At Hardwick we lose one of our guides. Mr. Murray alone shows us through the great glazed hall the Countess of Shrewsbury built. He says, without much enthusiasm for its Elizabethan character, "it is still habitable, but destitute of all comfort, and very little suited for a dwelling of the present time, though the duke now and then stays here." Walpole has served again for an opinion and description of this wondrous place, and it comes off but poorly under the hands of the new guide. Especially among the very interesting and historically valuable portraits, we missed mention of Holbein's great drawing of Henry VIII. Fuller has said that "an ounce of mirth, with the same degree of grace, will serve God more than a pound of sorrow." In the same spirit we feel an ounce of appreciation in the art-world, with the same degree of discrimination, is of more service than a pound of cool description.

Mr. Murray has introduced into his volume the local sayings and customs of the counties he describes. Some of these are quaint, others humorous; all are curious. Among the sayings we may quote that of the people of Market Harborough. This town has no lands appertaining to it, a circumstance the residents indicate by saying, "A goose will eat all the grass that grows in Harborough Field." The fictitious common in question is also used as a terror for children;—"I'll throw you into Harborough field." At Groby, where the Queen of Edward IV. lived happily as the wife of Sir John Grey, there is a mere of 40 acres extent lying before the old house, called Stewardsbury. There are two sayings relating to this pool. If great improbability is to be expressed, it is common to say, "Then, I'll thatch Groby Pool with pancakes;" and if a death has taken place, that no one regrets, people say "There is many a wet eye in Groby Pool" for it. In the neighbourhood of Belvoir Castle, there is a weather-saying that runs, "If Bever hath a cap, you churls of the

* "Handbook for Travellers in Derbyshire, Nottinghamshire, Leicestershire, and Staffordshire." London: John Murray, Albemarle-street. 1868.
"Bemrose's Guide to Matlock, Bakewell, Chatsworth, Haddon Hall, &c." By John Hicklin. London: Bemrose & Sons, 21, Paternoster-row; Irongate, Derby; and the Library, Matlock.

† Vol. xxiii. pp. 617, 637, 659, and 669.

vale look to this." At Sileby there is a legend of a giant who took three tremendous leaps, which resulted in his death. Starting at Mount Sorrel, where he is supposed to have mounted his sorrel-horse, he leapt to a place called Wanlip (one leap). He then leapt a second mile, coming to the earth with so much force as to burst himself and his horse, at a place called Birstall; and after that misfortune, contrived to take a third leap, the spot at which he alighted being his burial-place, Belgrave. This tradition is alluded to in the saying, "He leaps like the Bell-giant or Devil of Mount Sorrel." At Lockington, which is at the extreme of the northern angle of the shire, when it is desirable to get rid of any importunate person, it is common to say, "Put up your pipes, and go to Lockington Wake." At Billesdon, which is a small irregularly-built Leicestershire village, there is a saying, "In and out like Billesdon." Derbyshire has a geographical saying too. Codnor Park, now celebrated for its iron-works, was once the ancient seat of the family of Zouches. The ruins of their castle consisting of some of the round towers that fortified the court-yard, with fragments of walling, pierced with windows and doorways, are still standing. There was a moat, and there is still a pond in front of the relic, concerning which it is said,—

"When Codenor's pond runs dry,
The lordes may say good bye."

Among the local curious customs is that which was kept up for 140 years at Hilton Hall. On the first day of the year the lord of the manor of Essington brought a goose to the hall and drove it three times round the fire, after which he carried it to the table and received a dish of it for his own use. This droll proceeding was only discontinued when the manors came under one lord. At Walsall, there is an annual adult scramble; for here a custom exists of throwing out apples and nuts from the Town-hall, on St. Clement's day, to be scrambled for by the people. Happy are the boys that are born in Walsall! At Wichnor, the same custom that has prevailed at Dunmow was once in use, and a wooden flitch of bacon still hangs in the hall. In this case it was John of Gaunt who instituted the custom by arranging that the owner of the hall should hold the tenure in virtue of his keeping a flitch of bacon always ready for any married pair who had been married a year and a day and would take the following oath:—"Hear ye, Sir Philip de Somerville, lord of Wichenor, mayntennor and gyver of this baconne; I, A. B., sithe I wedded my wife, and sithe I had her in my kepyng and at my wylle by a year and a day after our marriage, I would not have changed for none other, fairer ne fouler, richer ne poorer, &c. And if the said B. were sole and I sole, I would take her to be my wyfe before all the wymen of the world. So help me God and all fleshes!" Before the bacon was conferred upon the happy man, it was carried a journey out of the county of Stafford, with some further ceremonial. At Ashford, besides the custom of ringing the curfew, they keep up the much rarer one of ringing the pancake-bell on Shrove-Tuesday. At Lyme Hall, the property of one family for upwards of five centuries, there was a custom once observed of driving all the deer in the park to the front of the hall and then causing them all to take to the water in one body. In this park are preserved a herd of the wild white cattle considered indigenous. In the hall, which is an antique place cased with a modern exterior, we may add, there is a curious bedstead with a canopy of carved black wood, which is shown as that in which the Black Prince slept when on a visit to Lyme. The Tissington custom of well-dressing with flowers arranged in devices has been before mentioned in these pages, as well as that of hanging paper garlands in churches in memory of young people, versified by the Swan of Lichfield:—

"Now, the low beams with paper garlands hung,
In memory of some village youth or maid,
Draw the soft tear, from thrill'd remembrance sprung:
How oft my childhood mark'd that tribute paid!"

But there is a less-known custom in vogue at Castleton, where it is usual for the ringers to hang a garland on one of the pinnacles of the tower of the church on the 29th day of May, and leave it there for the year.

There is a remarkable case of longevity chronicled in the Hand-book as having occurred at King's Bromley, where there was an old woman who saw six generations before she died, all living at once; and so could say, "Rise, daughter, and go to thy daughter, for thy daughter's daughter hath got a daughter." Another natural curiosity we must pick out for mention out of this region of curiosities of a different character. At Roche Abbey there was in former times the form of a crucifix roughly indicated by nature on a limestone rock. This is thus mentioned by Hunter:—"A natural phenomenon, heightened possibly by art, might contribute to induce the monks to make choice of this spot. Among the fantastic forms of the limestone rock was discovered something which bore the resemblance of our Saviour on the cross. This natural image was held in high reverence, and devotees came on pilgrimage to our Saviour of the Rock. This fact is mentioned in the return made by Cromwell's visitors of the religious houses preparatory to their dissolution." The neighbourhood of Buxton, Matlock Bath, and the Peak is the grand region for natural curiosities, in the shape of waters, wells, and caverns. The fame of its waters brought visitors to Buxton as early as the reign of Queen Elizabeth. Four times was Mary Queen of Scots taken there by her custodian, the Earl of Shrewsbury; and thither went the Earl of Leicester and Lord Burleigh. Macaulay tells us, "England, however, was not in the seventeenth century destitute of watering-places. The gentry of Derbyshire and of the neighbouring counties repaired to Buxton, where they were crowded into low wooden sheds, and regaled with oatcake and with a viand which the hosts called mutton, but which the guests strongly suspected to be dog." The accommodation for the goodly company is thus differently described by the Elizabethan physician, Dr. Jones, who published a treatise upon the Well of Buckston, in 1572:—

"Joyninge to the chiefe springe betwene the river and the bathe, is a very goodly house, foure square, foure stories hye, so well compacte with houses of office beneath and above and round about, with a great chambre and other goodly lodgings to the number of 30: that it is and will be a bewty to beholde, and very notable for the honorable and worshipfull that shall neede to repaire thither, as also for other. Yea, the porest shall have lodgings and beds hard by for their uses only. The baths also so beutified with seats round about, defended from the ambyent ayre; and chimneys for fyre, to ayre your garmentes in the bathes ayde, and other necessaryes most decent."

The unfortunate Mary may have been a patient of Dr. Jones's, for she was at Buxton, with the chary leave of Elizabeth, in 1573, 1576, and 1580. In this last-mentioned visit she met with an accident. The Earl of Shrewsbury, writing to Lord Burleigh at that date, says:—

"I cam heddar to Buxtons wt my charge the 28 of July. She had a harde begynnenge of her jorney; for whan she shuld have taken her horse, he started aayde, and therwith she fell and hurte hur bake, wch she still complaines off, nottwithstanding she applyes the bathe ons or twyse a daye. I doo strictly obsarve hur maties commandment, wrytten to me by yr L. in restreyninge all resorte to this plase; nether doth she see norr is seene to any more than to hur owne pepell and suche as I appoynt to atende."

The last time the earl's royal charge visited Buxton was in 1582.

Among the minor architectural curiosities of this part of England pointed out are the Saxon crypt at Repton; a curious oak pew at Breedon Church, shut in at the top and sides so as to seclude its occupants from the rest of the congregation; a monument in Denby Church, of mosaic work, inlaid with gold; the crooked spire of Chesterfield; the octagonal church at Stoney Middleton, where is the lover's leap, of 100 ft. depth, taken by a young woman "crossed in love," who was not killed, as it is supposed she wished to be, but miserably lamed for life; many inscribed bells, as that at Eyam, on which is written, 'Jesvs bee our spede;" some stained glass; several articles of ancient furniture, preserved at different seats, as state-beds; the dos-a-dos figures on the marble monument in Kelham Church; and similar notable objects, nearly as vexatious to miss as some of the ancient seats and churches.

The sanitary experiment at Clipstone is described as worth visiting. We quote the condensed account of it:—

"A road on the right leads to Clipstone, 3 miles from Mansfield, an estate of the Duke of Portland. It runs by the side of a canal of irrigation, formed by the duke at an expense of 80,000*l.*, and called the Duke's Flood Dyke, by which the stream of the manor, augmented by the sewerage [sewage] and washings of the town of Mansfield, is distributed by minor cuts, tiled drains, and sluice-gates, along the slopes below it, and has converted a previously barren valley, whose sides were a rabbit warren, overgrown with heath and gorse, and its bottom a swamp, producing hassocks and rushes, into a most productive tract of meadow and pasture land, yielding three crops of grass annually. The river is diverted near the vale head and led along the hill side, and the bottom has been drained. The canal extends to near Ollerton, about 7 miles from Mansfield, the latter portion being applied to the lands of Earl Manvers. These famous meadows have been often quoted, together with those near Edinburgh, in sanitary and agricultural discussions. The canal water, after depositing all its more valuable contents upon the land, runs off through the bottom of the valley in a stream as clear as crystal and full of trout, though angling is forbidden. The domain of Clipstone exhibits a specimen of good farming, and is well worth a visit from all who are interested in agricultural improvements."

There is a group of attractions near this place, all duly pointed out in the Hand-book, and which should be borne in mind. It comprises the "Beautiful Gothic archway, called the Duke's Folly," serving for a school, and adorned with statues of the geni of the neighbouring forest, Robin Hood, Little John, Maid Marian, Allan à Dale, Friar Tuck, Cœur de Lion, and King John; Birkland Forest, where the partridge has been hunted with the hawk within the memory of man;" the Major Oak, 30 ft. in circumference, in which seven people have dined at once; Robin Hood's Larder, a hollow tree, in which a dozen people can stand upright, and in which a noted sheep-stealer used to hang up the carcasses of the sheep; the rubble remains of King John's Palace; the Parliament Oak under which Edward I. held a great council in 1292; and the picturesque forest-village and church of Edwinstowe.

THE CATHEDRAL OF TROYES.

THE Emperor has put Troyes into men's mouths, and tourists and travellers who are turning their faces homewards, either from Switzerland or from beyond the Alps, with still a reserve of time for the intermediate "few days at Paris," will do wisely to trench on their reserve for an intermediate day or two at that same Troyes. There is no city on the line of that long day's journey from Basle to Paris that will so well reward the lover of architecture, the student of its development, or the votary of the general arts, to each and all of whom architecture is almost equally welcome, whether good, bad, or indifferent, in progress or in decay, simple or sophisticated, provided it ministers, as it may under any one of these conditions,—as it does under each in turn at Troyes,—to picturesque effect. There is interest at Belfort, there is instruction to be found at Langres, where the cathedral alone repays a halt; but a first halt at Troyes is likely to induce a resolution to make a second. So numerous are its churches, and happily most of them may be found just at this present time,—and even the cathedral to a great extent,—with all the testimonies of their history uneffaced by restoration, either in the best taste or the worst.

The history is much the same here as elsewhere, if here its annals in some chapters seem to be written a little more distinctly than usual. In general summary it may seem but a very old story indeed. Designs overmatched in daring the means of complete execution within reasonable time; fashion changed meanwhile or the directing influence was transferred to other hands. The self-assertion of each successor was as merciless here as elsewhere, and work was carried on according to the new taste, and often enough in unsparing disregard of the congruous. Where the transitions are less violent, and especially when they are towards improvement, we may designate them honourably as developments, albeit it may seem that a structure completed in a single though inferior style were better than a hybrid, whereof one-half is insulted by contemptuous disregard and the other only notably disgraced by unworthy association. Here at Troyes the story of transitions is continued well down to the days of the Renaissance, and the architectural *catena* is so unbroken that it seems clear enough that the men who put Roman façades to Gothic churches were no foreign intruders, but true and native sons of the fathers who had attached Gothic façades to Romanesque naves. It was clearly open to these later men to cite the precedent, and claim to be at least as good—if they had not the Sthenelean confidence to "boast to be far better than their sires." They scarcely justified either pretension,—these later men,—certainly not at Troyes, only approximately elsewhere in France. But of the pretension itself they left no doubt. They turned to work in a revived style indeed, but with a resolution, while so working, to produce results similar to nothing that had ever existed before; and in this at least they succeeded where there was, perchance a little too often, no other success to boast of. Few nations can rival the French, it may be safely said, in the arts of peace, no less than of war, in conciliating large-

ness of design with a taste for detail: daring is the attempt to combine qualifications that seem so often hopelessly incompatible. The greatest results are only to be obtained by forcing them into union, and there is glory even in a splendid failure—"*Magnis tamen excidit ausis*,"—but woe to him who can do no more than overwhelm elegant and ingenious detail by clumsiness of general mass, or who degrades nobility of magnitude and generosity of scale into a mere acervation of paltrinesses. The architects who built at Troyes just at the crisis when the revulsion of taste came on, could not but prove themselves the sons of their immediate fathers. The tendency to the overdone and the fantastic that was rapidly choking the genius of the traditional style could not but reappear in the new adoption, and very extraordinary indeed are some of the new productions in which its survival is exhibited. The traveller who cares not to tarry may see an example, close to the railway station, of a Renaissance façade applied to an elder Gothic church; elsewhere within the city we find works still more portentous; occasionally Gothic tracery has been removed from windows that are refilled with combinations of pilasters and dwarfed entablatures and flattened circles. In the façade of the cathedral itself, Gothic and Renaissance work were going on concurrently, and even low down about the piers of towers and doorways it is impossible to divide the schools and epochs by any horizontal line, or clear vertical section; if the right hand supplied the Gothic frame, the left seems to have been ready to fill it in with Classic details; and the cusps and foils of the panels have but the same relief as the sculptured grotesques of mingled foliage and mythological forms, that are niched within and below them. Better than this it was that the new style should strike for entire independence: it was not long in doing so; and at the little village of St. André, near Troyes, the church of the patron saint has an elaborate double portal, in which the self-assertion of the intrusive style is complete.

At this moment, however, we are concerned to point out the interest that lies in tracing the history of the transition to Classicism in architecture, and the seat of a fund of materials for the history at Troyes. The subject has many analogies to the investigation—so interesting, and yet of such tantalizing difficulty—of the more immediate stages of transition between one otherwise well-marked geological period and another: the architect has probably a better hope of completing his theory than the geologist, but only on the condition of taking timely note of monumental records that are liable to increasingly rapid obliteration year by year.

The transition—the impulse to transition—came forth from the country which abounded most in classical remains. Its course was moulded there by individual genius; and in passing to neighbouring countries there was the additional influence of the circumstances of transport, and those of reception. History is here caught, or seems to be caught, copying her old exercises—repeating herself.

It is now well understood that the Gothic Church is a Romanesque Church translated into a new architectural dialect in which the expressions of pointed arches supersede the round. Reaction came on some three or four centuries after: the Pointed style—wondrously developed since its first emancipation from a Round style—was even destined to be translated back into a round style. There was a more vigorous formative energy at work in the first case than in the second. There are incongruous mixtures, doubtless, of the Round and the Pointed in abundance, variously superposed and interposed, as of even trabeation with arcuation; but the spirit of innovation was uncompromising and unhampered: it had no prejudices of its own—at least at first—and had no mercy on those of its predecessor. There was thus no detail in the old style that was not held to be open to most searching modification, and every novel exigence was met, for the most part, by novel adjustment, not by an evasion out of tenderness for the capacities of an imposed system. And so it was that this earlier transition had such a healthy development, and that the architecture that resulted was to its antecedent in the relation that a highly bred racer is to a well-conditioned roadster. The identity of species is unquestionable, but the breed and the training of generations have introduced differences before which even such an identity becomes of secondary importance. But when the time came that the transformed Romanesque was to be retransformed into Roman, the reconquering Roman appeared with an authority that hampered both adjustment and invention, even when they seemed to be most free. The idea of the Order and its elements had an imposing dignity that was not to be trifled with. The changes that even men of decided genius ventured to make in these were but slight and inorganic as compared with the entire recasting by which a Romanesque was converted into a Gothic archivolt,—a pilaster into a buttress. Roman architecture, at its very best, was an attempt to unite Italian arcuation with the trabeative principle of Greece; an attempt which never was organically completed,—a crudity to the last, and falling as rotting on the bough rather than as over-ripe, or ripe in any sense. The more truly artistic genius of the Goth succeeded where the Roman failed, and showed by what mutual adaptations the two systems could alone be, and might most happily be, co-operative and harmonious: the revulsion to the Roman system involved a liability to forfeit all the advantages of a solution already obtained, to resume an abandoned yoke. Architectural invention was cowed by the habit of the time that ranged the dicta of Vitruvius with the renown of Cicero, and, in awe of the rediscovered genius of antiquity, had still to learn to distinguish the degrees of its hierarchy.

So it is that the tyranny of Rome, of which the architectural, even as the political type, is the Roman triumphal arch, came back upon us, and oppresses us to this day, but never was heavier than in the earliest generations of its revival. Palladio then took the outline of the façade of Lombard churches, and gained glory from men by changing what was in itself an harmonious and original composition into one that was original only, and, as men should all have seen, neither harmonious in itself, nor even in the lower sense of being in accordance with ancient art, unless in the adoption of its faults.

In many of the Renaissance palaces of Venice we see the same manifest principle of substituting Classic details for Mediæval, while the Mediæval distribution of elevation as well as of interior is, in all the most important respects, unchanged. The transition in this form often commands considerable admiration in parts, though as a whole it can scarcely effect more than dignity in palpable masquerade.

The proportion of Mediæval mind that still survives unsuffocated below this unnatural skin varies very considerably. Thus, to the west of the Alps the force of innovation was constantly checked by traditional attachment to the high-pitched roof as a beauty, if it were not, indeed, by traditional belief that, having been so universal and so customary, it must be a necessity; and thus the Palatial, and even the ordinary Domestic, architecture of France, from the time of Francis I. downwards, retained above its Classic details a feature that, more than any other allowed by the Gothic, is at odds with the genius as with the practice of the ancients.

At Troyes instances occur of that most uncultured form of transition, when new features and details are intermixed incongruously with the old, or when new profiles are applied to old proportions; shafts, for example, being turned into abnormal Ionic columns, and a member is thus produced that is neither new nor old, proscribed both in the under and the upper world.

Matters mend somewhat when the ancient model is still the basis of design, with only so much adjustment applied to it,—it would usually be correct to say only so much violence done to it,—as enables it to be clothed with a tolerably self-consistent drapery of classicism. The process, if carried out with bold and inventive genius, might result in something so truly effective, expressive, and self-consistent as to disdain the qualifying term Transition, and be a term of transition in a better sense, a conclusive and proper Style.

Should failure ensue instead, there remains an impending punishment, and this comes with the accession of the dynasty of fastidious purity. The demand under such a dispensation is for copies pure and simple, literal repetitions of things once right, but only when left in their right places, and that even apart from transference of local relations, can impossibly be literally exact, while they are under penalty to be at least not better. Of this form of the revival there is at least nothing to be seen at Troyes, and it is not here that we recognize as we pass along her ancient streets reproductions of portals or porticoes from "the books," not even of a single column that would be acknowledged in schemes of the five orders. The enormous tower added in the sixteenth century to the church of Ste. Madeleine is a most portentous, and yet in some respects historically, and as a warning artistically, instructive example. A more monstrous hybrid was surely scarcely ever compounded than has been born of this graft of classicism upon Gothic design; badly designed columns, neither pure as revivals nor desirable as novelties and variations, standing tier above tier on stages of buttresses, but "Talk we not of it,—look and pass along," and pass we scarce can better than to the better and antique Gothic church to which has been added such strange disfigurement.

The Church of St. Urbain usually engrosses whatever attention can be bestowed on the smaller churches of Troyes; but after repeated visits to both it was La Madeleine that proved to have the strongest hold on the feelings. St. Urbain is dated 1262; the enrichments of its style are lavished on the exterior, while the interior is comparatively plain, and, sooth to say, and not merely by contrast, a little cold. La Madeleine includes whatever is most ancient in the ecclesiastical architecture of this ancient city, from pure Romanesque to the developed Gothic that corresponds, if it may not rather be called identical with, our Early English, and, indeed, in several stages of its development. Here the exterior architecture is comparatively uncared for and uninteresting. The eastern end was reconstructed in a still later style, but is not so unsparingly out of harmony as the celebrated *jubé* or rood-screen of 1508-17, beautiful as it is. This is well engraved by Fergusson (408), but the figure introduced somewhat exaggerates its scale.

The nave is remarkably short, consisting but of a single system of sexpartite vaulting precisely like the transepts. The western wall seems certainly original, and to preclude the supposition that the design is in this respect incomplete. The plan represents probably an earlier Romanesque church, of which the remains are seen in several piers and columns, with capitals rude enough in execution, but that from technical accuracy in distribution have claim to be called, if not Corinthian, Corinthianesque. The nave has double aisles opening into the pairs of arches of the transept; and much as the various piers have been altered, usually to a very bad style, there are remains enough to prove that this distribution also was original.

The north transept, with the crossing, is the most unaltered portion of all of the church in its original Gothic state. A triforium arcade surmounts a string-course that is only slightly separated from the mouldings of the large pointed arch below, and is included under another more important string-course that runs fairly into union with the capitals of the shafts that carry vaulting ribs and archivolts of the crossing. This is so far consistent with Early English practice, as we see it at Lincoln or Lichfield; but the tendency to loftiness could not be so prematurely checked in France, and the aspiring energy which presently carried the vaulting shafts as high as the shaft capitals of clearstory windows, asserts itself here, though in less conclusive fashion. Tall lancet-headed clearstory windows rise upon the string-course—a group of five, graduated from the higher central are at the north end,—and the main archivolts and the transverse ribs are stilted before they turn, almost as high as to the level of the springing of the lancet-arches. There are various indications of the extent to which the combination of vaulting and window arches was tentative, in want of correspondence between corresponding compartments. The diagonal vaulting rib of the north transept springs from a shaftlet superposed upon the tall shaft in the angle rising from floor to clearstory base, and takes a curve that has much appearance of being a true semicircle; to harmonize the transverse ribs of smaller span with an arch of such height was a necessity that thus early leads before our eyes to the invention of something much resembling the four-centred arch of latest Gothic. This was a great advance upon the unrefined form of a blunt oval which is given to the line of nook moulding over the clearstory windows on the north side of transept. Simplicity and dignity, too, were no doubt advanced by the change that so soon became universal to quadripartite vaulting; but a little longer perseverance in the earlier system might not have been unfavourable to richness and multiplicity of exercised embellishment.

On the northern wall of this transept the tri-

forium,—the blindstory arcade,—consists of a series of round arches against the wall divided by a group of imperforate shafts carrying the roll mouldings of pointed arches. The clearstory lancets descend on shafts sufficiently detached to admit of passage.

Only the first bay east of the crossing remains unaltered; the clearstory window here has a bold splayed arch filling the groin; a roll nook moulding springing from a slim Corinthian pillaret; the abacus of the pillaret is enriched with that dog-tooth moulding to which the heart of the lover of Early English always warms; it is returned horizontally across the splay, where it rises in the nook till it crosses the face of the wall again horizontally to the point of spring of the lancet roll moulding.

Very happy feeling for gradation is shown in the clustered shafts and the archivolts and diagonal ribs that spring from them at the great crossing. In their general abacus we have examples of those processes of modification that seem to have gone on concurrently at every architectural centre. The angular abacus that receives a diagonal rib, is turned from a feeling of harmony, in the diagonal direction; but only to substitute other discords by its acute and awkward angles with the sides of the adjoining abacus that are left parallel to a transverse springing. In one instance, at least, this difficulty also is corrected, the angles of the abacus being cut off, to the great gain of sweetness of transition. This was one of those cardinal changes that when fully appreciated—it begins sometimes with abacus, sometimes in the group of plinths—carried forward a style to its correctest form, if sometimes also on its way to sophistication. It marks the great line of transition in the series of bays of Westminster Abbey.

Beyond the first bay of the choir we come upon absolute reconstruction, and here ensues a change of the same intention that governed so many alterations of the older cathedrals. In the interest of masculine expression the necessity was recognized of conferring very decided predominance upon one division of a bay over either of the other two, and, indeed, over the other two together. The transformation of our Norman cathedrals was effected on this plan. In the Madeleine at Troyes, as at Winchester, the later architect obliterated the triforium in order to give a larger share of the unchangeable total height to the pier arches. It is true that at Winchester a certain trace of triforium is left, but the mouldings of the clearstory window are so carried down as in effect to absorb it. The pier arch now becomes a term of sufficient importance to follow in the harmonious sequence of gradation that links the proportions of arches of nave, of transept, of severey, of pier, of window openings. The loftier arches of choir and apse are thus undoubted improvements,—beautiful as was the sacrificed triforium,—and nothing can be better than the vista that is managed to the magnificent painted windows beyond; but the mouldings of these loftier arches are not good, and they die poorly into the plain cylindrical piers without abacus or capital.

The *vitraux* of the Madeleine,—nine or ten large painted glass windows, in perfect preservation,—the church is enclosed towards the east—date in the fifteenth and sixteenth century. They will attract and detain long the attention even of those who may not be without awe of authority or unapprehensive of manifesting interest and admiration that would get them into trouble with critics of the speciality. Let the quaintness but not the beauty of the subject of the Creation be inferred from the inscription written below it:—

> "Comment après ciel et terre,
> Et tout mi en son maylieu [*sic*]
> Fust faict nostre premier père
> En bel imaige [*sic*] de dieu.
> Comment il le faut refaire
> Trompe de malin esprit
> Par sacrifice et prière
> De nostre sieur Jesus Christ."

Finally, then, as regards the architecture of this really beautiful,—I speak of the interior,—interesting, and venerable structure. The style of its early Gothic appears in a remarkably unsettled state, and its tentative deviations for good and ill are as noteworthy as numerous. There is inconsistency, incoherence enough in the older portions, not only in the attachment of the Gothic to the earlier Romanesque, but even later, beyond even what may be palliated as due to the free manipulation of a confessedly elastic style; but the germs of dignified development are strong around us,—in the masterly application of the dog-tooth moulding in various scales and modifications, the firm yet flexible treatment of the vaulting, the free modification of ribs in section, and of the abacus both in section and plan, of the capital both in proportion and ornament.

Hoardings and enclosures indicate that care is being taken of some portions that are in more or less of jeopardy from age or failure, and reparation will probably ensue. The condition of the building, however, is at present most favourable for pursuing into further particulars that study of its history that is due to its artistic excellence no less than to its antiquity.

GENERALISATION IN ART.

THE celebrated dictum of Hobbes, that "words are the counters of wise men, but the money of fools," has a double force in its first statement; for, while no wise man would accept any word as more than the symbol or concentrated expression of a fact or an idea; on the other hand, no one who thinks at all can be blind to the remarkable significance often attaching to a single word, especially when such word is either absolutely new, or has been brought into use to an unprecedented extent. Among such words, which may be said to stand as landmarks of the advance of the tide of human thought, there is none more noteworthy at present, and none certainly which represents a larger and more important modification of thought and association than that somewhat clumsy polysyllable "generalisation." This word, along with its verbal compounds, meets us constantly in the pages of the foremost thinkers of the day, more particularly in those works which are devoted to, or connected with, natural science—from political economy to the Darwinian theory: everywhere we are exhorted to generalise our ideas, to generalise our information, &c., and the most important of recent historical works (that of Buckle) was nothing but an attempt to comprise under one vast generalisation the whole history and theory of art, science, and literature. There must be a reason for the constant use of a word which a little while ago was rarely met with in books; it must evidently stand for some general and widely spread change in our ideas and our way of viewing things; and it may be worth while for those to whom art is something more than a mere plaything, or than a means of making a living, to consider for a moment what it is which this word generalisation symbolises, and what is its bearing both on the theory of art in general, and on the practice of the particular branch of art which they are interested in cultivating or encouraging.

The word "generalisation," then, seems to be the concrete expression for a remarkable and unmistakable tendency, among thinking minds of the present day, to regard every fact and study every phenomenon, not merely in itself, but in its relation to larger groups of facts, and, finally, to one great law imagined as pervading all nature, and of which isolated facts are merely so many different expressions. Of course the principle of this is nothing new; for the very process of reasoning consists, as all logicians know, of the reference of any particular statement to a general one, with which it does or does not agree. But the tendency to this broad view of facts in their relation to a general law certainly has possessed the minds of men in this generation to a greater extent than it has ever done before; and there can be little doubt that this is in the main the result of the scientific theories and discoveries of the day. Sciences which, when in their infancy, were only groping after elementary facts peculiar to each, and having apparently no connexion with one another, have gradually widened their borders till they have overlapped each other; and it has become evident that what were formerly supposed to be totally distinct branches of study, are, in fact, so much interdependent, that the one cannot be adequately comprehended without some knowledge of the other; and thus, while science was formerly, and in her elementary studies is still, concerned, mainly in studying the differences of things, in her higher forms she is almost entirely concerned with their resemblances and with the capability which they possess of resolving themselves into expressions of a single law.

Although the steps by which this comparatively commanding position of modern science has been attained are inaccessible to the majority, it is impossible that such views can exist, and be constantly before the minds of those who write our best and most thoughtful books, without in the end influencing a great number of their readers; indeed, there are probably many whose tone of mind and habit of thought have been modified, even unknown to themselves, by their inevitable contact with such ideas in their passage through life; and though it cannot be denied that some of the leading apostles of generalisation (as Buckle, and in a lesser degree Comte) have been carried away by the splendid prospect which it seemed to open to them, into speculations baseless and visionary when regarded from our present standpoint, and that their theories would lead to an undue neglect of the claim of individual lives on our sympathy and attention; yet it is evident that this spirit of modern science, as it becomes diffused in society, must have the tendency to widen and enlarge men's ideas, to break down class and sectarian barriers, and, above all, to give to each man a more due idea of the relative value of his own particular occupation or pursuit, as a part of the great work of the world.

It is chiefly, perhaps, we may say only, in this last-mentioned view of the subject that we discern its significance in relation to the art-development of the present day; a significance which it is all the more important to insist upon because just now art seems, of all the occupations which are engaging modern intellect, to be the one least penetrated or touched by this enlarged and comprehensive spirit,—to be, in fact, in opposition (in its popular forms at least) to the genuine feeling of the age, as exhibited in the ranks of the foremost intellect of our time. This is the more remarkable, since the history of the great artistic epochs of the world shows us art or poetry as pre-eminently the generalising influence,—the power which deals not with parts but with wholes, which concerns itself with those broad associations of ideas and feelings which can only have full play when the disturbing influences of minor details and facts are left out of consideration. At periods when geology and social science were unimagined, and before astronomy had emerged from what Comte would call its theological stage, the Greeks were generalising all the principles of beauty discernible in nature into those types of architectural and sculptural design, which have been surpassed certainly in intensity of expression, but never in perfection and completeness; and under the hands of Raffaelle and some of his compeers arose the same broad and simple style of artistic expression, seizing upon the essential points which connect pictorial imagery with mental ideas, content to neglect all those minutiæ which, because they did not further, would on that account probably detract from, the main expression of the work; so that in their period art seems to stand as the one clear and comprehensible light, in a time shadowed by much moral, social, and scientific anomaly. In the present day the reverse seems to be the case; art and science have changed places. While we are gaining year by year those clearer lights on scientific and social subjects which enable us to connect the former with the latter, and to regard them as in a great degree different aspects of the working of one great law; there has certainly been no period when so much attention has been directed to, and so much energy expended in, artistic production of one kind or another, combined with such a want of certainty as to the object to be attained or the means of attaining it, and such a want of perception of the coherence of the various forms of art, and of the existence of broad principles which are common to them all. Take, for instance, painting, the most popular branch of art just now, and the one whose results are most easily compared side by side. The walls of our exhibitions are covered with what seem the productions of a dozen different periods and countries; so little evidence is there of any unity of purpose or principle, or any concurrence of opinion as to what art really is or what is required of it. And this want of generalisation is for the most part as apparent in single pictures as in the contemplation of the whole as a collection. For what is called generalisation in science is in the main the same thing, or at least springs from the same general causes as those which induce what is called "breadth" in art,—a quality which can scarcely be otherwise defined, but which was once well understood,

the main characteristic thereof being the recognition of a leading motive in a work of art, and the subordination of all details in the execution to the one end of emphasizing and clearly expressing that motive. This, it will readily be seen, is completely analogous to that peculiarity of modern scientific investigation and thought before described. But the majority of artists at present seem absorbed entirely in painting detail; detail of clothing, detail of anatomy, detail of flowers, trees, or still life, with much labour and accuracy, but in a mechanical purposeless manner,—a state of things which is exactly reflected in the greater part, indeed almost the whole, of the poetical and architectural art of the day, if indeed these latter deserve the name of art. So that it has come to pass that art in our day is not, what in its two greatest epochs, those of the Greek sculptors and the Renaissance painters, it certainly *was*, the expression of the highest intellect of the day. On the contrary, the greatest minds now and recently amongst us, immersed in the great studies and results to which modern science, with her broad and coherent methods, has been leading them, have rather turned their backs upon modern art, even as Horatius turned from the Tuscan army, "as not deigning" to bestow serious regard on studies which seem to move by no rule and to be directed to no fixed goal.

These considerations may the more fitly be dwelt upon in these pages, since the conditions of architecture in a peculiar degree demand that, in its highest forms of expression, it should be the result of a wide and thoughtful generalisation; both from the peculiar position which it holds with regard to the other arts, and from the nature of the resources from which its own individual power is derived. Viewed in relation to the others, architecture may be called emphatically the generalising art. Its possibility of connexion with the other plastic arts, which are all susceptible of being used as attendants upon it, giving definite expression to its various parts, renders it absolutely necessary that architecture should be in harmony with, and form a kind of concentrated expression of, the artistic feeling and principles of its time (supposing these to have a definite and ascertained direction), in order to produce a harmonious unity of expression, and to appear as the natural centre round which the other plastic arts range themselves, and to which they owe their appearance of connexion and union for one grand end. And architecture being thus connected on all hands with other more definite though narrower forms of artistic expression, it is evident how necessary to its practitioners is that comprehensive view of the general art-principles and practice of their day, which will enable them to meet the practitioners of the other branches of art on common ground, and so to design the great monuments of their own art that these latter may appear as the proper and fitting background for the sculpture and painting which will always form their best decoration, and that such added decorations may appear to be only the more concentrated expression in detail of the same feeling which has been shadowed forth more broadly, though indefinitely, by the building itself.

But if we come to consider the problem of architectural design, *per se*, apart from any consideration of relation to the arts which accompany it, it is still more evident how necessary to its successful accomplishment is the study of general principles of beauty, as distinguished from the mere selection and reproduction of beautiful forms from nature. Much of the merit of the painter and sculptor consists in the fidelity with which they reproduce and copy in their respective materials the colour and forms of natural objects; and though no small industry and labour, combined with natural aptitude of hand and eye, are necessary to arrive at any real success even in this mechanical branch of the art, still it is a result which (given the requisite aptitude) can be attained by labour, without any great mental exercise or power of thought; and while it is admitted that no picture or statue can take rank as very high art which exhibits merely successful imitation unaccompanied by intellectual expression, yet even the successful imitation of nature is a power in itself, productive of pleasure to the beholder; while the fact that the sculptor or painter has to express his feelings through the medium of forms already made to his hand, no departure from which can be tolerated, certainly simplifies his path very much, and stands him instead of a great deal of philosophising as to the true principles of beauty in form and colour.

But with the architect such philosophising would seem to be almost a necessity, if he would penetrate the mystery of his art, and give to it all the expression and power of which it is in reality, in its highest forms, capable. He has no "life" class to attend, no model from which to copy direct, no forms of beauty around him, the mere faithful transcript of which will be sufficient to make his name honourably known among his brethren. He cannot, like the landscape-painter, collect during a summer tour boundless resources of colour and effect from the mere woods, and hills, and streams before him, which seem waiting there to yield their beauty up to the ready canvas and the practised pencil; the most that he can do in this way is to make a sketching-tour among the ruins of buildings erected long ago for different purposes from those which his own day requires of him, and by workmen possessed of ideas of beauty quite distinct from those which would recommend themselves to the leading intellects now around him, even as their knowledge of construction and economy of material was based upon considerations widely different from the careful calculations of the modern engineer. This, however, is left him, and to this resource he commonly betakes himself, for it is the last barrier which divides him from the labour of original thought. It is well if he have a mind sufficiently educated to enable him to trace the principles which are exhibited in the works before him, to perceive the relation between the end aimed at and the means used to attain to it, and thus to read the works of his ancestors even as characters in history should be read, not merely with regard to what they actually did in the circumstances in which they were placed, but with regard also to what they, being the same men, would do under present circumstances, could they have experience thereof. But the probability is, that there is little enough of this spirit in the architectural tourist, and that he comes back with his note-book filled with incoherently collected details, which are forthwith reproduced, with little alteration, in his works, where they tell the tale of his recent wanderings, and indicate what region of architectural remains he has last been groping amongst. What is really necessary to deliver him from this Slough of Despond is that education of mind which will lead to the habit of thought which we have called generalisation. The architect, having no definite forms to copy from, even in ornamenting his building (unless he commit the absurdity of reproducing in rigid stone or iron forms of which every line tells that they were originally created in a soft and yielding material), much less in its general aspect and plan, is called upon to generalise from the natural facts and incidents of beauty around him; to observe what one quality is common to a number of beautiful impressions, either in Nature or in the sister arts, and then to produce a design displaying that essential quality in a form suited to the material with which he has to deal; to give the essence of beauty, so to speak, without its accidents; so that where, for instance, a floral ornament may seem a proper and desirable accessory to the expression of a building, we may see there no partial attempt at copying the vegetable productions of nature, but rather a well-considered form, sufficiently rigid not to appear in danger of being crushed by the superstructure, not out of keeping with the necessarily rigid lines of the building, and exhibiting not the accidental form of one particular growth of nature, but recalling the *principle* of growth which runs through all. So a column or support (as in that splendid instance of generalisation, the Greek Doric column), while free from all such absurdity as the copying of the limb of man or animal, will yet exhibit the same principle of form and balance which is exhibited in nature whenever strength is required. These are but isolated instances of the principle which should govern all relations between natural objects and architectural design; but even to rightly comprehend this principle, much more to rightly practise it, an intellectual education is required very different and very much beyond that which is attainable, and is considered sufficient, by most architectural students in the present day; and we propose in continuing the subject, to consider what are the defects in our architectural education suggested by this view of the necessity of generalisation in architecture, and how such defects may be in any degree remedied.

THE LAUNCH OF THE "BERMUDA."

THE Talmud has preserved a tradition that the giants, who watched the shipwright labours of the patriarch Noah with the same incredulous dislike with which they received his oral warnings, were wont to ask, with jibes and scoffs, how the great ship was to be brought to the water. The world may have grown wiser during the 4,500 years, or more, that have elapsed since the date so memorable as an era to the builder, but it has not become so absolutely wise but that the questions, and even the laughter, of the antediluvian sceptics have found more than one echo within the last dozen years. The refusal, on the first day's trial, of the floating-dock *Bermuda* to float, or to stir from the spot on which the enormous mass of 9,000 tons of iron plate has been riveted together, shows that our constructors have failed fully to profit by the lessons of the *Northumberland* or the *Great Eastern*, to say nothing of the humbler voice of counsel and of warning which has sounded from our own pages.

The last century has witnessed so signal an advance in the condition of the country, in so far as that condition can be affected by the knowledge and by the labours of the engineer, that we are apt to overlook our failures, or to count the cost of that habitual procedure by rule of thumb which may, without exaggeration, be said to have increased the expense of our public works by at least 30 per cent. It has been in works carried on avowedly at the public cost that this waste has been most enormous, attaining its evil maximum in the management, or rather the mis-management, of our dockyards. But in all instances where the money of shareholders, or of sleeping partners of any kind, has to be expended, we are apt to find wasteful, or ill-considered, expenditure rather the rule than the exception.

When we consider the state of England a century since, we are entitled to take an honest pride in the results of the subsequent labours of our self-taught engineers. Our roads may be said to date from 1745. The reclamation of our fens, the erection of lighthouses, the formation of docks and harbours, the canal system, the railway system, all date within three generations. Since the days of our great-grandfathers we have not only covered our island and its coasts with these noble and useful works, but, which is more, we have produced the men who have not only carried them out, but have originated them.

It is only a thing of yesterday that engineering should so far take its station among practical sciences as that an expensive and highly-cultured education should be thought requisite for the engineer; and even at this moment it is rather for the military, than for the civil, engineer that such a training is viewed as absolutely essential. But the men to whom we owe the origination of English engineering (since the skill which moved the mighty blocks of Avebury and of Stonehenge has passed away, leaving no record but that of the blocks themselves) were not, for the most part, educated men. Rennie, the architect and builder of London Bridge, of Southwark Bridge, of Waterloo Bridge, was a self-taught millwright. Smeaton, the builder of the Eddystone Lighthouse, commenced life as a maker of mathematical instruments. Telford, author of the Menai Suspension Bridge, and of the Chester and Holyhead road, was a working mason. George Stephenson was a colliery labourer.

One marked distinction has very generally obtained between the works of these self-formed engineers, and those of the more cultured and highly-educated men who have replaced them. The workmen have advanced step by step. They have foreseen practical difficulties, and they have provided for those temporary stages of the work which the theoretic engineer is sometimes too apt to overlook. Thus, in the designs of Rennie for his great bridges, the construction of the centring appears to have occupied as much of the care of the designer as the elevation of the structure itself. The engineer of the London and Birmingham, and of the Great Western Railways, when they issued their drawings and specifications for public tender, left the centres of their bridges entirely undescribed. They were to be at the risk, and after the designs, of the contractors.

This neglect of minute attention to any detail, even to those of temporary and subsidiary work, has been illustrated by not a few great engineering mishaps. It is hardly fair to the memory of Mr. Brunel to class the launch of the

Great Eastern with that of the *Northumberland*. Those who had the advantage of personal intimacy with the engineer of the *Great Eastern* ship are aware of the remarkable and untiring patience with which he was accustomed to ponder over every step of his bold and original projects. This care had not been wanting in planning the launch of the *Great Eastern*. The enormous length of the vessel, as compared with the width of the river, led the great engineer to decide on a sideways launch. The displacement of so great a mass in a lateral direction, is attended by less impetus than the vessel naturally acquires in running headlong down sloping "ways," and, where there is not room for the full swing of the floating body, the motion in the river, in the former case, would be more under the control of the engineer. At the same time there arose danger from the want of experience as to this method of launch. It was this very want of experience with which the profound meditation of Brunel enabled him in so many instances to dispense. Nor is there any reason to doubt that the launch of the *Great Eastern* would have been a perfect success, but for a circumstance almost entirely independent of the mechanical conditions of the problem. It was not the mechanic who was at fault: it was the policeman. The river, at the time fixed for the launch, was covered with boats of every size. All attempts to keep the public at such a distance as regard for their safety demanded were set at nought, and the full surge that would have attended the unchecked launch would have caused the submergence of many of these foolhardy trespassers, and, very possibly, would have involved a great loss of life. It was to prevent this that Mr. Brunel, when the great mass was, in accordance with his prevision, fairly under way, gave orders to check its accelerating speed. The check acted as a terrible blow on the whole of the subjacent structure. The inclination of the "ways" was disturbed, for the mass of the vessel was driven upon the piling as if by a gigantic fall. The result was natural and unavoidable, but it is to be attributed to Brunel's care for the careless spectators, and not to any miscalculation as to the mode of launch, or the power requisite to start the enormous fabric over the "ways."

In the *Northumberland* the case was entirely different. A mechanical error of great magnitude was committed, as we pointed out at the time, in the structure of the ways. Two separate inclinations were adopted, the result being the interposition of an angle, or in fact a hill, in the line of descent of the vessel, the consequence of which it might have been easy to forsee.

In the present case the failure which threatened to be even more complete, is happily overcome. The vessel which did not move at all on the first day has been safely launched on the second. It is always unpleasant to be compelled to add one's voice to the chorus of discontent and of blame which misfortune is certain to raise; and it is a pleasure when the warning voice of the public writer has to dwell on what might have been, rather than on what actually was, a great misfortune. Still the failure to start in the first instance the great weight of the *Bermuda* is in itself highly suggestive.

An inference of especial interest, not to marine but to terrestial builders, is deducible from former failures, as well as from the recent hitch. The Thames is not the best locality for building enormous iron ships. We say nothing for the moment of the labour question, of the blight which the shortsighted selfishness of the shipwrights has brought upon East London, of the wasteful absurdity of dividing our Government dockyards into so many dissonant and distant fractions. But the point to which we refer is the fact that, in this great haven and highway of commerce there is no room for the requirements of the builder of a leviathan fleet.

There can be no doubt that the launch of an iron vessel of the size of the *Great Eastern* or of the *Bermuda*, even if conducted on the most well-ordered design and with the most uninterrupted success, is an operation of great cost as well as of considerable risk. To some extent, indeed, cost and risk may be considered as counterbalancing one another, and such an arrangement as puts risk out of the question must be attended by an original outlay of a very heavy character. It is true that risk has occasionally proved more costly than the steps taken to avoid it; but, leaving this out of the question, the provision of proper "ways" and the whole expense of the launch form no trifling item in the total cost of the vessels of which we speak.

There is no adequate reason why this cost or this risk should be encountered. In the crowded Thames it is difficult—perhaps it is impossible—to avoid the necessity; but remove the scene of the labours of the ship-builder, and the difficulty entirely vanishes. There is no reason why a large iron vessel should have to be launched at all. The *Great Eastern* or the *Bermuda* might each have been at this moment afloat without undergoing that costly and hazardous process; and if either of them had been designed by a man of the patient forethought of a practical man like Rennie, it is probable that the difficulty would have been eluded.

In the case of the *Great Eastern* it is within our knowledge that a proposition was made to Mr. Brunel which would have entirely avoided the trouble and cost of the launch. It was considered by him for more than a fortnight, and was then declined on the sole ground that he wished to be able to give such constant personal attention to the construction of his favourite vessel as he could do only if she were built within a short distance of London. The proposition made was to build her in Milford Haven, which, at that time, had just been linked to the capital by the South Wales Railway.

In Milford Haven is to be found a vast natural dock, adequate to contain the navies of the world. Sheltered nooks, with deep water close in shore, tempt the builder of a *Leviathan* to establish his forges on the banks. Nothing would be more simple than to construct such a vessel afloat, either by launching the bottom, when the sides had been carried only so high as to secure flotation, or by constructing the entire work on a properly prepared gridiron. The bottom once buoyant, the raising of the sides would be a simple and easy task, and the vessel, thus built afloat, would never have to be launched. The money value of the suggestion is not its only merit. Certitude would, by this means, be substituted for enormous hazard, and the influence of high tides would no longer have to be depended on.

The subject is eminently practical; so are our remarks. It is not the education or the ability of any individual engineer or ship-builder with which we have to do; it is the protection of the public against that needless loss of money which has converted so many of our public works into private misfortunes, instead of unmingled benefits. The writer in pages like our own occupies a position entirely different from that of the political journalist. The latter is an essayist, of more or less learning and ability, on the topics of the day, whose task it is to treat of each as it arises from a special point of view. Amongst politicians, men of the tongue or of the pen, he lives and acts as a politician. He engages in the current warfare, as if from a border fortress, or conspicuous watch-tower, but as one taking no uninterested part in the fray. With the writer on scientific or on practical subjects, the case is different. His aim is truth. He may, as all men are liable to self-deception, be turned from his course by crotchet, by imperfect knowledge of his subject, or even, perhaps, by personal dislike of those of whom he criticises, not the character, but the works. But any such aberration must be the exception rather than the rule. The common elements of disturbance, from personal causes, that affect the political writer, are all but unknown to the scientific journalist. He does not take up the pen to comment on Mr. A.'s speech, or Mr. B.'s pamphlet, or fill his columns by endorsement of the arguments of his friends, or demolition of those of his foes. His writings ought to be, and often are, rather the reports of a consulting engineer on some subject of current importance, than the explanation of the lecturer, or the pleading of the advocate.

But the more fully the scientific writer attains to the fulfilment of his self-imposed task, the more disquiet does he feel that his labours too often miss that direct mark of recognition that would await them if they assumed the form of a professional report. They reach, it is true, a far more extended audience than does the former production. Not only a large number of our own readers, but those of the principal daily papers, for example, had under their eyes our former remarks on the misfortune of the *Northumberland*. That which we are anxious to make clear is, the grave responsibility that must attach to all professional men who are deaf both to the teaching of experience and to the voice of educated warning. We hope to see many more iron vessels of great size and weight constructed. For a time, but we believe for a limited time only, we shall be building heavily-plated ships of war. The epoch of enormous merchant-vessels is only at its dawn. The *Great Eastern* was intended but as a feeler towards the construction of vessels of a thousand feet in length, or even more. Anything like a return of public confidence will be sure to warm into life a project for an enormous Channel ferry-boat, in the first-class carriage run easily on board of which the traveller may pass from England to France in unbroken slumber, contemptuous of seasickness. In all cases where enormous weights are to be set afloat, we call upon the designers to remember the lessons for which England, publicly or privately, has already paid so dear. We hold that the next engineer who shall fail to slide harmlessly and cheaply into the water 9,000 tons of iron which he has had such costly lessons *not* to pile together on dry land, will be responsible for the damage. What is it to lay down the finest lines, to calculate most exactly the displacement, to proportion the engine power to the intended speed, to carry into iron existence the creations of the drawing board, if the step between the arsenal and the ocean has to be bridged at a cost of a tenth or of a fifth of the vessel? Why should the certainty of an outlay of thousands of pounds, and the risk of ten times the amount, be blindly and obstinately encountered?

It is possible that the vested interests of the owners of large ship-building yards may appear to be endangered by this view. We do not think this is the case. We have ample experience in similar matters. All such experience tells us that those who shut their eyes to the importance of admitted scientific truth will ultimately come by the worst. In any invention that has diminished human labour, there has been a division of interest between those who expected to be in some way inconvenienced by the change, and those who took the tide at the flow. It was thus on the one hand that the most enterprising coach-owners came to the front in early railway enterprise. It is thus, on the other hand, that the farmer who depends on horse culture, is distanced by his neighbour who uses the steam plough.

Those ship-builders who hold that, in order to avail themselves without further trouble of the costly conveniences of their own yards, they will run the risk of having to push into the water nine or ten thousand tons of iron in the lump, which they might have floated a ton at a time, will find themselves distanced by those who calculate betimes that it will pay them better to erect a temporary, or even a permanent establishment, on the shore of some available creek; and who, after their first proof of success, will find future work accumulate on them unsought. But engineers should not wait for the education of ship-builders; they should insist on the construction of vessels afloat. Considerations of individual convenience should not be allowed to weigh in such matters, against adherence to the laws of mechanics. We are said to have passed the days of miracle, although the wonderful works of contemporary science are such as to dwarf many of those labours which the superstition of the past attributed to a superhuman origin. But our ship-builders have no right to follow, in this respect, the example of the diluvian patriarch. If they persist, after this third warning, in building floating iron castles on dry land, they will deserve the satire of the lookers on. And if this satire be expressed in legal phraseology, and its point be impressed on the subjects of the joke by the officers of the law, the general comment on the judgment will be the memorable verdict, "Served him right."

While the builder of the *Bermuda* is entitled to adduce, in reply to any criticisms on his plans for launching his noble work, the fact that she is actually afloat, he deserves more unqualified praise for the skilful application of the method of weighting by water ballast, the introduction of which by Mr. Brunel into the double shell of the *Great Eastern* provoked the comment that the engineer had emulated an organic structure. The combination of an outer and an inner iron skin, a series of cellular compartments, and an apparatus for introducing or extracting air or water, is one capable of a very high degree of delicacy and efficiency. It may be noted that the plan of pumping water into the upper compartments, and at the same time admitting the access of the external water into the lower ones by gravitation, would give a double efficacy to every stroke of the pistons. The extraction of air, however, coupled with the

admission of water, will probably prove the most available means of dealing with the distribution of water ballast. The idea of building a large ship to serve as a dock for smaller vessels, a dock to be constructed in our own waters, and tugged to her destination in dependencies where labour is costly and scarce, is one of no small merit. We wish God speed to the *Bermuda*, and a safe arrival at her destination.

BRISTOL AND CLIFTON.

THE first of the new roadways to be constructed by the Bristol Board of Health,—namely, one running from Maudlin-street to Park-row,—has been opened by the mayor. It is called Perry-road after the name of the Chairman of the Streets' Improvement Committee, to whom the carrying out of this and other intended improvements in the means of communication has been referred. At an entertainment given afterwards by Mr. Perry to those who were concerned, that gentleman said the new road they had passed over that day, though it would be one of the greatest boons to the city, by reason of the easy access it would give to Clifton, would be done at this cost:—a man rated at 100*l.* would have to pay something like 2*s.* 6*d.*, while the poor man, rated at 10*l.*, would pay about 3*d.* a year, for the next thirty years. He did think that no one, be he poor or rich, would begrudge paying that amount for so great an advantage. The improvement, as they saw, was quite in its infancy; it was but part of a great scheme. Park-row would be widened, to the same width as the new road, from the new thoroughfare to the Drill-hall; and Maudlin-street would be widened to the same extent from the entrance to the new road to the Infirmary; and ultimately the thoroughfare would be carried through, though not at the same width, to Stoke's-croft, so that the inhabitants of the east end of Bristol would be able to ascend to the heights of Clifton by a very easy access. There were many other matters contemplated: the committee had not confined themselves to the improvement of one locality.

Mr. Alderman Proctor, in replying for the Improvement Committee, incidentally contrasted the new road with Steep-street, which was once the main road to the city. The house there which now stood back was cut away to let coaches pass when they were first introduced.

The City Hotel, which is being erected on the site of the old "White Lion" and "White Hart," in Broad-street, is making rapid progress. The builders are to have an extra 500*l.* if the building be ready for the furniture by the 31st of October. The hotel has a frontage of 110 ft., and it runs back a distance of 136 ft. The front entrance steps, in Broad-street, lead to the vestibule or lobby, 28 ft. by 11 ft., and from this an arcaded hall runs the extent of the building to the billiard-room. To the left of the hall, after entering, is the commercial-room, 50½ ft. by 27 ft. Opposite this, to the right of the hall, are the coffee-room and club-room, 42 ft. by 27 ft., and 36 ft. by 22 ft. respectively. Up-stairs there are upwards of 100 sitting-rooms and bed-rooms. There will be a range of shops, one story high, in front of the building in Broad-street, with kitchen beneath each. The shops will be covered in with iron and glass. Character is given to the upper part of the main building by a bold cornice, the soffit of which is slightly relieved with colour, having beneath it a loggia or open gallery, the front of which is formed with freestone pillars and carved capitals.

New buildings are being carried up in Clifton with marvellous rapidity; in some cases indeed with so much rapidity that they do not get strength enough in their progress to remain up, notwithstanding the bracing air of the downs. Walkers in Clyde-road, Woolcott Park, on the 1st of this month saw a pair of what are called semi-detached villas partly roofed in, with bow windows and everything pretty, but when they passed next morning they found in their place only a heap of dusty rubbish,—gold pieces to-day and only dried leaves to-morrow, as in the fairy tale. It seems that the front wall of the left-hand house fell first, then the front of the adjoining house, and then the flank walls of both as far as the partition wall dividing the front rooms from the back. A local paper gives as the most feasible reason for the fall that the stone was dug on the spot in close proximity to the walls, and that there was a good deal of heavy blasting to get out stone on the previous day. Judging, however, from the walls that can still be seen, we should say that very heavy blasting was not requisite to produce the disaster; the workmanship is very bad. Moreover, the bow-window of one house adjoined the bow-window of the next, and they ran in so closely to the party-wall that there was probably but little strength at the junction to carry the bressummer which supported the wall above. As to the party-wall itself, it did not run through on the upper floors, but appears to have butted against the half-brick partition wall that goes from side to side through the two houses. When we add that this half-brick wall is made to carry the floor-joists of the back rooms, and is bulged and twisted in all directions, we shall have said enough to show that the parts of the houses which remain should be carefully examined, if not taken down. We know the difficulties that officers find in the discharge of their duties, or we might, in the interest of the public, have something sharp to say to the district surveyor. Had the fall taken place in the daytime, instead of at night, there would probably have been loss of life to deplore.

COMPLETION OF THE INDIAN COURT.

IN the *Builder* of October 26th, 1867, an illustrated description was given of the inner quadrangle at the new India Offices, Westminster. The reader might have noticed incidentally the remarkable variety of materials employed in the building for decorative purposes, a variety unknown in practice comparatively few years ago. The floor of the court is of tiles, laid to a pattern, and has parapets of Portland stone.

The main portion of the walling, plain and decorative, is of Portland stone. The Doric columns which face the piers dividing the bays of the ground story and first story are of Peterhead red granite, with red Mansfield capitals. The dividing columns of the second floor are of dark grey Aberdeen granite (now, we believe, worked out), with dark grey Dean Forest stone capitals. In addition to these materials there are majolica and mosaic friezes and pateras, and tesselated floors and ceilings in the loggias. In our notice we remarked that the Indian Court had served an important use in connexion with the reception of the Sultan. The result suggested the idea that it might be well to roof in the quadrangle, which has now been done with success.

The view given in the number of the *Builder* above referred to showed the finish according to the original design, by a balustrade round the four sides of the quadrangle at the top, leaving the entire area open to the sky. The afterthought to cover the court by a permanent roof presented a somewhat difficult problem. The whole of the daylight to be obtained had to be received from the sky-opening, which is 80 ft. above the floor of the yard; it was therefore essential that the minimum of opaque surface should be presented, and to this end iron as the bearing agent, and glass as the medium for light, were the only materials that commended themselves for use. The covering of an area 115 ft. long, with a span of 60 ft., would have necessitated the use, had the roof been constructed of timber, of a large aggregate of light-obscuring surface, and divers broad stripes of shadow, which the use of iron obviates.

The roof consists of principals springing from above the tops of the columns in the interior, which are carried up from the basement to the crowning balustrade. It is louvred, and has six laps on each side, each about 8 in. open for ventilation, with 18 in. of lap. The space between the principals is filled in with iron astragals placed at 18 in. between centres, and resting on horizontal angle irons at top and bottom. The ends of the roof are finished with pavilions, the eaves of which only descend to about half the depth of the sides. To compensate for the shorter slope of the roof and to complete the finish at the ends of the court, Mr. Digby Wyatt, under whom the work has been done, has designed a pair of truncated screens, in the Renaissance style, in Ransome's patent concrete stone. These screens, which are highly enriched, are probably the best specimens of their productions that the company has as yet turned out, not excepting the great capitals for the University of Calcutta, which were some 4½ ft. in diameter, and as much in height; or the capitals, finials, and trusses of the Nawab Nizam's palace at Moorshedabad. The screens are each about 67 ft. long, and in the central or highest part about 7 ft. high. Their mean thickness is about 6 in.

Reverting to the roof and the management displayed in its construction, it should be stated that the cope of the balustrade, which was the original finish at the top, was inadequate to bear the weight of the superstructure that had to be erected. Mr. Wyatt served two purposes, to give extra strength and also finish by the expedient he employed of erecting a strong cast-iron framework behind the balustrade, and resting upon the top of the solid wall. This raised iron wall plate, which furnishes a base for the roof, stands 20 in. above the finished stonework. This contrivance enabled the workmen to construct the roof by travelling scaffolding, without the necessity for poles raised from below, excepting at the ends, at which the terraces afforded ready facilities, furnishing as they do a solid floor from the top of the second story to the roof.

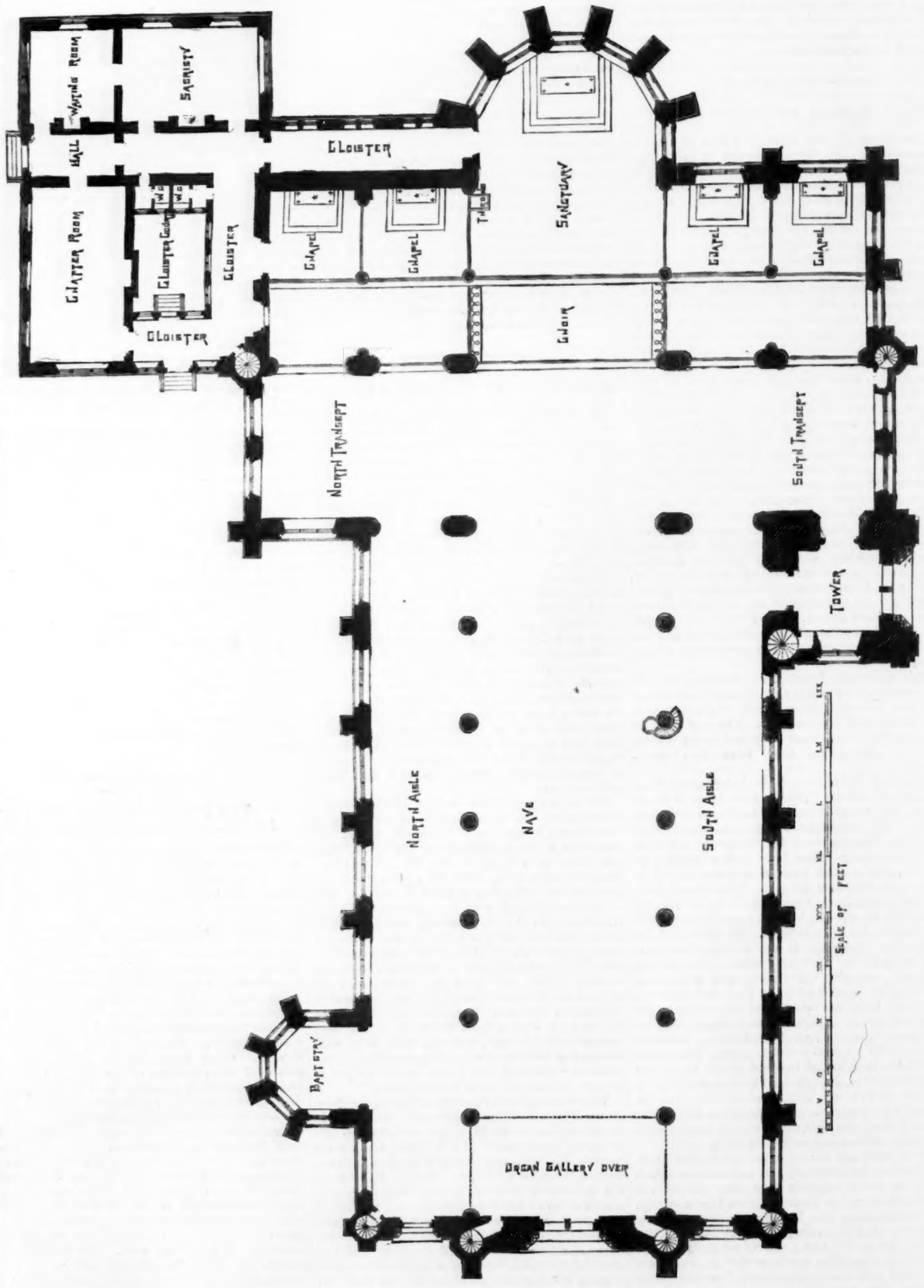
The double ties that connect the feet of the principals of the roof are covered with cast-iron perforated plates of ornamental design, with turned up edges showing about 1½ in. thick. The rolled plates of the principals—the real binders—are 4½ in. deep. The upper plates project over these at each side about 3 in., and the whole produces a good effect in giving the idea of a bound ceiling, the panels being as many skylights, instead of plaster as in an ordinary ceiling.

The colouring of the metal is pale blue, cream colour, dark red, and flat gold, and with the neutral or air tint, in which the metal work above the ceiling is coloured, which does not in any degree attract the eye, produces exactly the result designed. The framing, so to speak, of this great panelled ceiling corresponds, longitudinally and laterally, with the dividing columns and bays in the interior of the court, the decorated girders being carried over from column to column in each direction, single, or coupled as the case may be, in the corresponding girders and columns. Trusses of open iron work, and designed in harmony with the other portions of the ceiling, fill the spaces between the top of the balustrade and the girders above. Large pendants, also of open iron work, are suspended at the intersections of the girders, and the alternate panels have centre ornaments fixed upon rods crossed diagonally in the spaces. The angles at the intersections are enriched throughout with open iron ornaments.

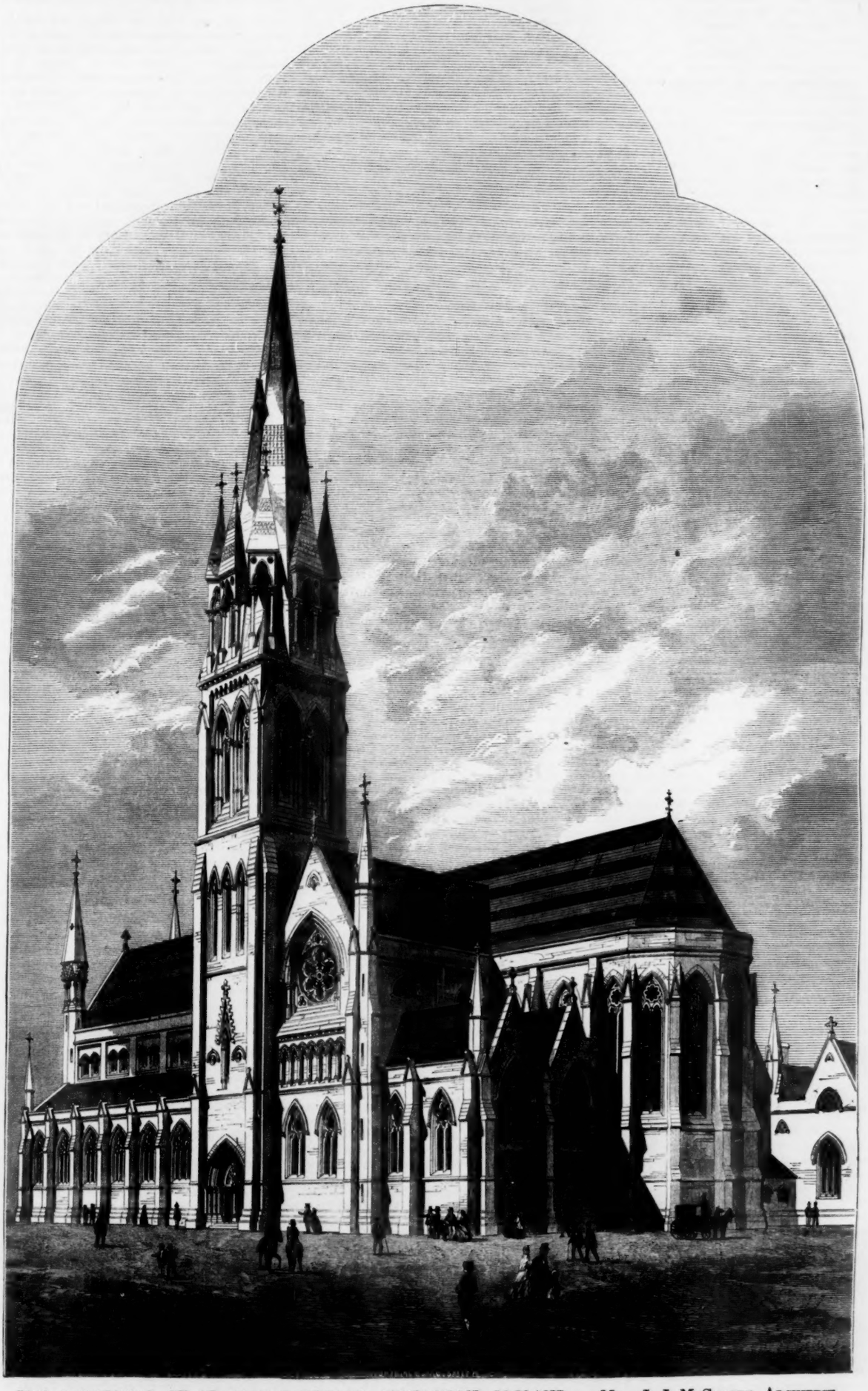
THE (R.C.) CATHEDRAL OF ST. MAC CARTHAIN, MONAGHAN.

THE ancient diocese of Clogher was founded in the fifth century by St. Patrick, who appointed his disciple, St. Mac Carthain, its first bishop. Clogher was chosen, say the antiquaries, by the national apostle, in order that "the disciple might not be too near the metropolitan see of Armagh for familiarity, nor too distant for friendly intercourse." During several centuries the now comparatively obscure town of Clogher, in the county of Tyrone, maintained the dignity of an episcopal city. By the Act of Parliament which suppressed ten bishopricks in 1838, the see of Clogher became united to that of Armagh in the ecclesiastical government of the Established Church. Other circumstances caused the removal of the residence of the Roman Catholic bishop to the more populous town of Monaghan, the capital of the county of the same name. Here the late Bishop Mac Nally commenced, in 1862, the cathedral of which the annexed illustrations show the plan and south-east view. Dr. Mac Nally did little more than lay the foundations. His successor, Bishop Donnelly, has continued the work with unabated zeal. The material of which the cathedral is built is hard grey sandstone from the immediate neighbourhood, relieved by dressings, mullions, and tracery of sandstone of a warmer tone. The building is carried out from the designs and under the superintendence of Mr. J. J. M'Carthy, R.H.A., architect, by Mr. John Farrell, clerk of the works.

INCREASED PARK EXPENDITURE IN LIVERPOOL. At the last meeting of the Liverpool Town Council, it was resolved that an additional sum of 150,000*l.*, as provided by the Act of 1865, should be borrowed, for the purpose of improving the public parks of Liverpool.



THE CATHEDRAL OF ST. MAC CARTHAIN, MONAGHAN.—*Plan.*



THE CATHEDRAL OF ST. MAC CARTHAIN, MONAGHAN, IRELAND.—MR. J. J. MCCARTHY, ARCHITECT.

THE FIFTEENTH CONGRESS OF GERMAN ARCHITECTS AND ENGINEERS.

IN our last number we gave the programme of the annual meeting of architects and engineers, which, as we stated, was to take place this year at Hamburg. A temporary tastily-decorated pavilion* had been erected on piles in the centre of the handsome ornamental piece of water, the "Inner Alster," and this was the general *rendezvous* of about 2,000 architects and engineers on the evening of the 31st of August. Of course much small-beer was consumed on the occasion, but it must have proved an interesting evening to those who had — as most of these gentlemen have — studied at the Polytechnic schools of Berlin, Hanover, Carlsruhe, Munich, and Stutgard, to see faces again which they had probably not met since the days when, arrayed in diverse-coloured "corps" caps, they used to hear the same lectures, or went on sketching tours under the same professor. The following morning the first general meeting was opened by the president, Mr. F. G. Stammann, architect, of Hamburg. He welcomed the strangers to his ancient Hanse Town, and regretted the unavoidable absence of several leading men of the council, such as Director Karmarsch from Hanover, Mr. Engert, Mr. Theophilus Hansen, and Mr. Fr. Schmidt of Vienna; Mr. G. Semper of Zurich, and Messrs. Wiebe and H. Strack of Berlin. He then read the list of members of the council deceased since their last meeting, all standing up whilst the short list was being read. They were Maack of Hamburg, Siccard von Siccardsburg of Vienna, and Stüler of Berlin. This and other business closed the first general meeting, and the visitors then dispersed in order to visit the various sights of the city. The quays in progress of construction at the harbour and the preliminary works for the new railway bridge across the Elbe attracted considerable attention. The evening again brought all the members together at a special representation at one of the theatres.

The second day, September 2nd, after breakfast at the Zoological Gardens, was chiefly devoted to the reading of papers, followed by discussions, in which many of the leading men of Germany took part. The discussions in the architectural sections included a paper by Dr. Heinzerling "On Æsthetic Design," and one by Professor von Ritgen, "On the Wartburg in the Thuringian Forest," lately restored by him, with discussions on both subjects. Two important subjects were referred to committees to be reported upon, namely, "Professional charges" and "Competitions." To the former of these we propose to return another day; the latter was decided as follows: that the Institute of Architects at Berlin should be requested to publish all *bonâ-fide* competitions, and that advertisements emanating from *other* sources should be disregarded. This is a decision which we in England might reflect on with advantage.

The following gentlemen read papers in the sections for civil engineers:—Mr. Hoffmann, C.E., "On Economical Construction of Railway Bridges;" Professor Baumeister, of Carlsruhe, on the History of Bridges and Aqueducts;" Mr. Köpcke, C.E., also, "On Bridge Construction;" Mr. Haack, C.E., "On the Quays and Works connected with the new Harbour at Hamburg;" Mr. Plath, of Hamburg, on what he calls "The Water Plague," or infusoriæ clinging to ships.

For the 3rd of September an excursion had been arranged to the interesting old city of Lubeck, which was reached by ten a.m. Tickets of four different colours had been issued to the members, and, on arrival, they mustered under small flags corresponding in colour with their tickets. By this simple contrivance, the otherwise unwieldy number of sight-seers was sub-divided, and visited every point of interest, but in different order, so that they never met, and therefore never obstructed each other. To describe what they saw would be to transcribe from Murray or Bradshaw. Lubeck, as well as Bremen, has its "Rathskeller," with the twelve Apostles, or huge vats of Rhenish wine, some so old that both taste and colour have departed long ago; and we are specially told that this, not the least curious of the sights of Lubeck, was by no means forgotten.

The 4th of September was the last day of the congress, and was chiefly occupied in committee meetings and in the final general meeting, in which Dr. Stammann reviewed the proceedings, of the various sections, and then brought the business part of the congress to a close. In the evening a *conversazione* united all for the last time; and although it was announced that pleasure trips to Heligoland and to Kiel had been arranged for those who could or would remain a few days longer, the great majority left the next day for their various homes.

* This pavilion was built with consent of the authorities, on condition that it should be removed immediately after the Congress. It is now to remain until after the festivities in honour of the King of Prussia, who is expected to visit Hamburg, on his return from a tour in Holstein and other new provinces of his extended dominions.

NOTES FROM SIENA.

IT is satisfactory to find that, notwithstanding the present somewhat anti-ecclesiastical tendencies dominant in the political and social temper of Italy, all due care is taken for the dignity, decorum, and restoration of great religious monuments. A sojourn at Siena has afforded the writer the opportunity of inspecting and admiring works now in progress; for the most esteemed local sculptors have been engaged in this fine old city, still so decidedly Mediæval. On the façade of the glorious Duomo, the statues of prophets, by Jacopo della Quercia (his first works executed in marble), are now being, or have already been, restored by two native artists—Sarrocchi, a pupil of Dupre, and Maccari. Other statues and emblems, by three pupils of Niccolo Pisano, named Goro, Donato, and Lapo, are, so far as restoration is required, to be in the same manner retouched; and a half-length statue of an ancient king is now in the studio of Sarrocchi, to be renewed for the same church-front. Two of the emblems of confederate cities are already finished, the one (an ox) completely renewed, the other (a horse) renovated on the antique original. Della Quercia's majestic statues, on the summits of the two pilasters flanking the chief portal, are, we are glad to see, still preserved in their integrity, though somewhat worn and much discoloured. For the upper parts of the façade, around and above the great circular window, have been commissioned to the same Sienese artists, twenty-four statues, in full or half lengths, of the saints and kings of the Old Testament. The celebrated intarsio pavement of the interior is never shown to the public, in those portions the most prized, except on a few high feast days; but private views are obtainable, when, for a cicerone's fee, the boarding that protects those admirable specimens of inlaid marble-work will be removed. We had the pleasure of seeing everything, in this way, and have only to regret the much damaged condition of several among these beautiful *tarsia*, especially those on the landing-places of the stairs external to the Duomo and the Baptistery, or *San Giovanni*, and the two that strikingly illustrate, in groups, the parables of "The Blind leading the Blind," and "The Moat and the Beam," both of date about 1433; also the "Seven Ages," small but admirable figures, by Antonio Federighi, 1475; and the "Death of Absolom," by Pietro del Minella, 1447,—all more or less injured. Of the ten sibyls, in the aisles, a series commenced 1481, each figure by a different artist, three are now being restored, and, so far as we could judge from what is already done, with intelligence. We understand that it is the intention to accomplish much more for the benefit of this noble church, both inside and outside, where repairs may be found requisite and means are not wanting. There is, happily, no occasion for any modern touches to the sculptures of the famous pulpit, by Niccolo Pisano (1266), which stands in its rich originality and exquisite elaboration intact, reverenced by time, as by man, to this day.

The total renovation of the *Fonte Gaja*, on the principal piazza of Siena, has been going on for several years, and is now so near to completion that nothing but the figures of the emblematic wolf (representing this city) to be placed on different pedestals, advancing into the water, are still wanting. It is well known that the sculptures on this fountain, commenced in 1412, gave a new name to the successful artist, so that thenceforth Jacopo della Quercia became locally celebrated as "Jacopo della Fontana." But time and rigours of climate have dealt hardly with his admirable *chef d'œuvre*. It has been necessary to remove all the marble panels on which his reliefs are executed; and the above-named artist, Sarrocchi, has had the commission for copying the entire series,—the Virgin and Child, enthroned in the central compartment, eight personified Virtues, all being female figures seated, under arched niches, and on the wings that project laterally, the Creation of Adam and the Expulsion from Paradise. In careful execution the copies seem to us praiseworthy; the *ornate* details or pilasters between the niches, graceful; but, in the state in which we have seen the originals, we find it scarcely possible, without opportunity of immediately confronting them with Sarrocchi's works, to decide as to the modern artist's fidelity to the spirit or style of the great master, Siena's pride in the fifteenth century. It is consolatory to know that, in their sadly-mutilated condition, his reliefs for the fountain will be, at all events, preserved for posterity, being now deposited in the Communal Palace, there, we understand, to remain. Judging from what we have seen on the piazza, we might observe the inequality of merit in these sculptures, the somewhat heavy, though dignified character of the Madonna's form, and the comparative coarseness of the Adam and Eve, both too fleshy for grace, in the group of the Expulsion. Other things noticeable in the achievements of modern art, within or near to this city, might well repay the visitor for stopping to inspect them.

PAY IN THE PUBLIC WORKS DEPARTMENT, INDIA.

THE civil engineers in the employ of the Government of India have just now, we believe, for the second time, tendered a memorial to the Governor-General regarding the smaller rates of pay they receive when holding places of exactly the same responsibility as military officers. To understand the question, it is necessary to go back awhile, and look into the history of the Indian Public Works Department. In the early days of the East-India Company frequent wars left little funds for the improvement of the country. Roads were made to facilitate the movements of troops; barracks were the chief public buildings; all such works were under the Military Board, as it was termed,—a body of four members, consisting of the chief engineer, the commandant of artillery, the commissary-general of the army, a stipendiary member with a secretary. These, besides attending to the public works, had to control the commissariat stud and other departments of the army; and this continued till the business to be done became so extensive that the arrears broke down the system. Thus up to about 1853 the public works were a purely military department, about half the officers composing it being trained military engineers, and the other half officers taken from the cavalry or the line regiments with or without an examination in surveying and the native languages. The departmental rules they followed were those of a compilation entitled the "Barrack Masters' Assistant." When Lord Dalhousie commenced civil works on a large scale it was clearly seen that the Military Board was an ineffective means of direction, and its powers were transferred to the Secretariat, whilst the entire organization of the Public Works Department was remodelled. But it still continued to be supplied exclusively from military sources with engineers. India has all along had a civil service, and the civilians, as they are termed, have filled almost every description of office,—judge, magistrate, opium agent, collector of the revenue,—but none of the scientific ones. The reason is obvious enough. The latter have always had small salaries attached to them, and therefore offered no very attractive career as far as emoluments were concerned. Why science should of necessity be rated so low is a matter not easily justified. The effect was to throw them into the hands of the army. The company used to maintain for each native regiment an establishment of some twenty-three officers, whilst the duties of the service in time of peace could in reality be carried on by half that number. The remainder were encouraged to acquire Hindustani or some other of the vernacular languages, and leave their regiments for civil employment; in fact, it was the prospect of obtaining this transfer that led young men of any ability into the Native Military Service at all. For in itself the purely regimental life in time of peace was monotonous, and to an active mind disgusting to the last degree. Everything was settled by regulation, and if not fond of sport or of idleness, there was nothing to be done but drag out existence, creeping out of doors late in

the evening, and indoors early in the forenoon, keeping well out of the way of the sun, and longing for the coming round of leave time or retirement. Promotion was by seniority and excessively slow. A captaincy had often to be awaited fifteen years, and meantime the lieutenant was drawing what his brother civilian, now a collector on nearly 3,000 rupees a year, got when studying the languages upon first coming out to this country, or something like 300*l.* a year. It was, in consequence, a great matter to escape from the insipid and unprofitable life of a native garrison to situations of responsibility and independence. No one could quit his regiment without passing an examination in languages; but once through this, it was seldom any further qualification was exacted. But to secure the most eligible and best-paid appointments it was necessary to have what was called "interest;" that is, to be related or known to men in power. Officers who had interest would never go into such a department as the public works, so the selection was thus far narrowed; and as it was in no way better paid than departments in which the work was lighter, it is unlikely to have had the pick. The corps of engineers having no option, were employed as a matter of course, and seldom or never allowed to select another line. The rest of the department was filled, it may be presumed, chiefly from the cavalry and infantry officers, who could not get in elsewhere. There was one great principle adhered to in remunerating officers withdrawn from regiments for civil duty. They received a civil salary in addition to the pay of their rank. When military promotion was very slow, this enabled the company to secure the services of good men at a most moderate figure. A consolidated salary of the same amount would never have had the appearance of a staff salary, these terms being respectively used in India to denote whether a salary takes regard or not of military rank and pay. But a staff salary was readily sought. That mode of payment, however, was hard on rising merit. A young officer of ability, had he been in the civil service, might mount the ladder very quickly, and be as well off as men of twice his standing in seniority; but it could not be so with the recipient of a staff salary, for his deserts could not accelerate his military advancement, and what he could add to his salary by them was trifling. In 1861 the whole scheme of military promotion in the company's army was altered. Instead of attaining higher military rank by seniority, it was reached by length of service. A lieutenant of twelve years' service became captain, and a captain twenty years in the army became major. The alteration vastly increased the number of officers of field rank, and many who would have been captains for years found themselves majors and colonels. The change told curiously on the Public Works Department. Qualifications are by necessity more attended to than seniority in posting to the different grades, and a captain who is a talented and experienced engineer may be chief engineer while an infantry colonel may be in the lowest grade of executive engineer. Yet the subordinate would receive the most pay of the two under the regulations formerly in force. This was an inequality too glaring to be passed over, and in 1865 a maximum scale was fixed, and above this no military officer, whatever his rank, could draw.

The staff salary principle was, as far as possible, retained, and officers of no particular army standing might draw less than the maximum. The subject of complaint by the civil engineers may now be easily comprehended, if we give the maximum salaries fixed for military officers side by side with the maximum salaries given to civil engineers holding exactly the same appointments and performing precisely the same duties:—

Engineer.	Military.	Civil.
Chief, 1st class	Rs. 2,500	Rs. 2,500
„ 2nd „	2,000	2,000
„ 3rd „	1,850	1,750
Superintending, 1st class 1st grade	1,800	1,600
„ 2nd „ 2nd „	1,650	1,400
„ 2nd „ 1st „	1,550	1,200
„ 2nd „ 2nd „	1,350	1,000
Executive, 1st grade	1,250	900
„ 2nd „	900	750
„ 3rd „	750	600
„ 4th „	600	500
Assistant, 1st „	500	400
„ 2nd „	450	300
„ 3rd „	400	200

The memorial does not confine itself to this disparity, but enters into questions of military rank, still further influencing the maximum scale, which would be too much complicating the matter to consider at present. In a general way there seems no reason for the two classes of chief engineer to receive the same, and the civil executive engineer to receive 25 per cent. less than the military executive engineer. The higher, or military scale, does not appear an excessively liberal one. If 2,500 rupees a month be divided by two, since a rupee and a shilling are in their respective countries practically synonymous—they change rupees for shillings in the shops in the presidency towns of India—1,500*l.* a year is not a great deal for the few at the very head of their profession. Nor is a salary of 1,250 rupees in the same way to be taken as representing an income of 750*l.* a year more than enough for an executive engineer who has been long enough in the service to rise to the first grade of executive engineer, and so on down the list. The Government of India could end the whole business by merely declaring the maximum for military officers to be that for civil engineers. To do so would only be to adequately remunerate a body equally meritorious with the civil service. But the Indian Government is still ruled by prejudices of long standing, and, on grounds it does not relish very much making public, will probably do its utmost to maintain the difference. That the way officials in India are classed and paid is arbitrary in the extreme is sufficiently well known to those connected with the East. The civil service proper, styled the Covenanted Service, has all its leave and pension rules on the most liberal possible footing. The Uncovenanted Service, comprising judges of the High Courts of Justiciary, educational inspectors, engineers, legal functionaries, surveyors, and others, are mostly under rules framed to suit the native Indians, working in their own country and a congenial climate, which read as harsh to a European as those of the Covenanted Service read generous. Of civil engineers there are two divisions also—the never-ending covenanted and uncovenanted—and the covenanted are not allowed the benefit of covenanted, but are related to the harshness of the uncovenanted rules in all points not provided for in their covenants. If the Government of India will not do away with such anomalous distinctions, it should explain to the public satisfaction why it is they are expedient.

THE SCIENCE OF COLOUR.

I AM sorry that my attempts to define and defend what I believe to be the true theory of colour have been unsuccessful with Mr. Colling. Part of the mystification he complains of seems to arise from his not distinguishing three things that are different,—namely (1), the colour which is the sum of two given colours; (2) the colour which is the mean of two given colours; (3) the colour which is common to both of two given colours.

The sum of two colours is obtained when we add together the whole of the two coloured lights; as, for instance, when we collect all the rays of the red and green portions of the spectrum, without any of the blue rays, and obtain thereby the brightest yellow which it is possible to obtain. This may be done by throwing together the red and green portions of a sunbeam which has passed through a prism upon a white screen, which will reflect them together to the eye; but the experiment requires the aid of some optical appliances, and is not easy for an unskilled observer to perform. The same thing is much more easily done in the method pointed out in my last letter, the *rationale* of which I there fully explained, as it is not apparent at first sight. If Mr. Colling will give himself the trouble of a little more study he cannot fail to see that the modification of the experiment which he suggests gives no other result than what I stated. It is not correct to say that the green is formed by allowing the yellow to approach the blue ray; the truth is that the yellow disappears where the red rays are not added to the green. He must remember that the purer the spectrum (the narrower the line of white from which it is made) the deeper is the green, and the less conspicuous the yellow; while the bright yellow only appears where the white space is so wide that its red spectrum overlaps its green; and that if it is made still wider, or, which is the same thing, brought nearer to the prism, white appears where the same overlaps the blue spectrum also. When these things are seen it will not be thought ridiculous to say that green added to red makes yellow, and that by adding blue yellow is converted to white. It is the simple truth of nature, and so clear that if after this Mr. Colling writes any more to the contrary, I shall be tempted to think, in return, that if he is an earnest student in the science of colour, he must be but a dull one.

The mean of two given colours, or that proper to the sum of half the two coloured lights, we may correctly obtain by the method of rotation, or by using a piece of glass as recommended in my treatise and former letters. Let the colours be those of the best pigments, and I do not think better can be found than scarlet vermilion, emerald green, king's yellow, and the powder of cobalt blue, laid on with the least quantity of gum in the water, that will make it adhere to the paper. The results perfectly agree with those obtained by adding the prismatic rays; that is, the vermilion and emerald green give a shade of yellow, of the mean brightness of those pigments, and the king's yellow and cobalt blue give a shade of white of their mean brightness, or a neutral grey, about half way between black and white. If Mr. Colling has a piece of Iceland spar, which gives two images of an object each half its proper brightness, and will lay small round spots of the colours to be mixed side by side on a neutral ground, and view them through the spar in such a position that one image of each shall overlap and be seen together, he will see the same result.

The third point, the colour common to two given colours, is found by the mixture of two transparent pigments; or the superposition of coloured glasses or solutions, against white; and this, in the usual erroneous theory of colours, seems to be regarded in general as the sum, or at least as the mean, of the two colours. I had thought this mistake too well known, and too generally admitted, to need explanation even in a popular treatise; but Mr. Colling's endeavour to explain the production of sky-green by the blue sky being seen through a yellow medium, and of the green of leaves by the mixture of blue and yellow colouring matters, and then to defend the usual theory by such illustrations, proves that he is not aware of the fallacy involved, or quite overlooks the fact that his illustrations (even if the supposed causes are admitted), are but other instances of what is better seen when washes of gamboge and Prussian blue are laid on white paper. The yellow pigment most powerfully absorbs or extinguishes the blue rays, and very freely admits the passage of the red and of the green, as may be seen by analysing its colour by the prism: the blue, especially if it be of a sea-greenish hue, like a moderately thick indigo or Prussian blue, most powerfully extinguishes the red, and admits a considerable quantity of the green rays. Thus the green rays penetrate both pigments together, down to the reflecting surface below and back again, more freely than the rest, and reaching the eye, excite their proper sensation without complication with the red and blue rays which overpowered them in the separate pigments. Thus the green, supposed to be created by the mixture of blue and yellow, is in reality merely filtered out; and the purer the colour of the blue pigment is, the less is the residuum, and the darker the resulting green. When a surface, blue by daylight, is viewed by candlelight, which is deficient in blue rays, its colour is of course modified in like manner on the same principles.

I hope I have made my meaning sufficiently clear; but unless Mr. Colling patiently experiment for himself, and study the subject till he clearly understands the results of the experiments, I have no hope of convincing him. He has wrapped the veil of a false theory about his eyes, and holds it fast at present; and this makes him suppose that a fallacy, obvious to an unprejudiced mind, is a self-evident truth which it is as absurd to deny as "that two and two make four."

One remark I would make on the last sentence of Mr. Colling's letter,—"It is a question whether what we call white light exists at all; probably the term is only comparative, and that we view everything more or less through a coloured medium, according to circumstances." Assuredly no simple or homogeneous light exists which produces the sensation of white; but when we look at a piece of chalk illuminated by the common light of day, and in the normal state of the eye, we can hardly question that the sensation of white we receive is excited by a certain mixture of rays which may therefore be correctly called white light, even though the same

object illuminated by the yellow light of a candle, or seen by an eye which is affected by a predominance of some non-white combination of luminous rays, may not then appear white. In truth, white in all its shades is more easily and correctly determined by the eye than any other colour, probably because, all the three simple sensations being equally excited in it, the eye is not distracted in viewing a white surface by a greater sensibility for one of those sensations than for another. W. BENSON.

FEW of your readers can have failed to see with interest your notice of Mr. Benson's investigations on this subject, the animated controversy of which it has been the occasion, and the author's calm and logical defence of views that seem to some too heretical to deserve patient and candid examination.

I have little desire to enter into the contest, and shall, therefore, not trouble you with any expression of my own opinion on a matter which is purely one of experiment and induction; but I think such of your readers as may be disposed to look at a new theory in your own impartial spirit, may like to see the inclosed extract from Sir John Herschell's "Familiar Lectures on Scientific Subjects," as showing the conclusions of that eminent observer.

CHAS. E. CONDER.

"The consideration of these facts has given rise to a speculation which, if not demonstrable, has at least a high degree of plausibility, and which, at all events, has never yet been disproved,—viz., that there is no r-al connexion between *colour* and *refrangibility*, but that there exist three inherently distinct *species of light*, each competent *per se* to excite the sensation of one of three *primary colours*, by whose mixture all compound tints are produced, white consisting of their totality, and black being the exponent of their entire absence; that, moreover, each of them has a spectrum of its own, over the whole length of which it is distributed according to its own peculiar *law of intensity*, and from whose superposition on the same ground results the *prismatic* spectrum, coloured as we see it." * * * * *

"In this view of the subject, the prismatic colours, with the exception of the extreme red, are all more or less mixed tints; and this agrees well with its general aspect, in which the red and indigo-blue are the only full and pure tints, the green being by no means a *saturated* or full green, and the violet having a strong dash of purplish red in it.

The three primary colours assumed in the above figure are red, green, and blue, each in its highest degree of purity and *undilution*; for it will be readily apprehended that while the admixture of any one, in however small a proportion, will produce a rich though a mixed tint, that of *both* the others tends to dilution. The only three colours which answer all the experimental conditions, are these three. This may seem contrary to the experience of the artist, who, from his habitual practice in mixing the colours he uses (all of them without exception compound tints) would name yellow, in place of green, as the intermediate primary. The reason is obvious. In all the yellows which he uses there is a large admixture of red with green, and in all his blues more or less green. When mixed, then, there is sure to be a preponderance of green, while the red goes to neutralize a portion of the other two, and so to dilute the outstanding green. On the other hand, *the direct mixture of the prismatic yellow and blue, in whatever proportions, can nohow be made to produce green*, as Professor Maxwell's, M. Helmholz's, and my own experiments have distinctly proved; while that of the prismatic green and red *does* produce yellow."

LOCKING RAILWAY CARRIAGE DOORS.

THIS practice generally conduces to the safety of passengers, that is, if one door only of each compartment is locked, the door on the "six foot" (or middle of the line) side. But of course there are occasions, and the Abergele catastrophe was one of them, when the power immediately to open the locked door is all-important. Allow me to suggest that in each compartment of all passenger carriages, a door-key should be hung up in a glass *locked* case. On an extreme emergency the glass could be broken, and the key taken out and used. But it should be a criminal offence to break this glass without sufficient excuse. PASSENGER.

MARGATE AND RAMSGATE.

PERMIT me to inquire again through your columns whether the town councils of these places have had a return of the number of houses in which cesspools, or fever-pits, exist; and the number to which there are proper drains and water-supply. It is my belief that a much more intimate connexion exists between the wells and the cesspools from their contiguity than is at all desirable. Until the whole system of drainage and water supply has been completely remodelled, neither place can be deemed to fulfil sanitary conditions.

A SURVEYOR,
Holding a Public Appointment.

"JOSEPH NOT A CARPENTER."

SIR,—In your paper of 29th ult. it is stated in a paragraph under the above heading that "when the British Archæological Association were inspecting the gallery of paintings at Charlton House, attention being called to the picture of Joseph working as a carpenter, assisted by the child Jesus, Mr. Black said he wished that Joseph had been represented in his proper business as a mason, the original term used signifying architect, builder, or mason, and not carpenter. The term carpenter, he urged, was undoubtedly an error, as in the climes where Joseph dwelt no wood was used in the erection of the structures of their houses, but stone only."

Now, without in any way calling in question the merits of Mr. Black as a Greek scholar, I am inclined to believe that in the present instance the authorised version of the New Testament gives the proper translation of the word in question, it being a fact, as well authenticated as any fact connected with the history of Jesus and His relatives can really be held to be, that Joseph was not a mason, but a worker in wood, and that he had nothing to do with building operations.

Justyn Martyr says that Joseph was a carpenter, and that Jesus assisted him in his business, which consisted in "making ploughs and yokes for oxen;" while the "Gospel of the Infancy of our Saviour" says that "Joseph took Him [Jesus] along with him to all the places where he was sent for to do business, to make gates, and milk-pails, and sieves, and trunks."

W. M.

LIGHT WANTED!

SIR,—Why did not the authorities place the new lamp in Holborn, 3 ft. to the eastward of its present situation, to throw the light up Gray's-inn-road? Why do guardians of the poor, after erecting schools for the children, employ pauper attendants, for the sake of a miserable and short-sighted economy? B.

DAMP DRIVING THROUGH BRICK WALLS IN EXPOSED SITUATIONS.

SIR,—I have found two coats of raw linseed oil a perfect remedy against the above. See that the pointing is good. Apply the oil when the walls are dry. A little Venetian red, in dry powder, added to the oil, improves the colour of the bricks. Cost, about 3d. per yard.

T. R. Y.

WHITEWASH ON STONE.

SIR,—Will any of your readers kindly inform me of a method of freeing a rubble stone wall from many coatings of whitewash otherwise than by the tedious and very ineffectual process of scraping? I. H. S.

HERNE BAY.

PERHAPS it would be difficult to name a place where by a judicious expenditure of capital so much could be accomplished. The town is half a ruin; houses incomplete,—never finished; skeleton frames of houses,—in fact, some are dangerous from the timber supports having perished, and this is a matter requiring the attention of the local board. A number of sheltered retreats want constructing towards the railway; a band-house, similar to that in Regent's Park; a reading-room; and, above all, a market-place. Everything is very dear; fish supply *nil*; and Whitstable and Faversham are the depôts from which supplies are drawn. The water supply is very defective and deficient.

Surely the *on dit* is not true that the ruinous pier is to be allowed to remain for two years as at present, and that then the London, Chatham, and Dover Railway Company either pull down or rebuild? NEMO.

CHURCH POLYCHROMY.

OBSERVING a letter in your columns signed "R. C. H.," and asking for information on polychromy, as an effective and cheap way of imparting a warm and cheerful tone to church-walls, I beg to say that I have just had some work of that kind executed in my church, at a very moderate cost, and with extremely satisfactory results. I have had a reredos painted in distemper, with an effect very similar to that of Minton's richest encaustic tiles, and my walls decorated with a dozen boldly-written texts; the whole for the cost of 15*l*. My texts are written in *very legible* characters, 6 in. in height; and, with the addition of a bold border of a simple pattern, they constitute an ornamental, as well as an edifying, addition to the fabric. JAMES FRASER.

Upton Rectory, Reading.

ELECTRICAL PIANO.

M. SPEISS, electrical instrument maker at Sumiswald, Switzerland, has invented an excellently combined electric piano, which can be set in movement either in the ordinary way or by means of a battery, giving a current of electricity which acts upon a most ingenious mechanical arrangement. Thus any airs can be played automatically. They are written by means of a contrivance on a band of paper similar to those on a Jacquart loom.

The apparatus as it stands consists of two different sections, which can be separated from each other at a considerable distance. The first portion or controlling agent is a mechanism of clock-work, the uniform motion of which can be modified at will, which passes a roll of strong paper from one cylinder to another. Between these two the paper is stretched against a brass roller put in contact with one of the wires of an electric battery. Above these three rollers there is a small keyboard, the hammers of which, of very thin brass, are in communication with the other pole of the electric battery. The band of paper prevents the passage of the electricity except where it is pierced with holes of different lengths corresponding to the notes of the air to be played on the piano; the neatness of execution, and the rapid "fingering," are most astonishing: although the battery which performed before our eyes and ears was only composed of thirty-six elements of Daniel's, the force of the piano was fully equal to that exerted by a good player.

Each of the hammers of the piano can be set in movement in two different ways; one, by means of the ordinary touch of the pianist; another, by a small vertical rod of wood, which can lift the lever and strike the note when it is lifted upwards. In the execution of the music this traction is effected by electro-magnets, equal in number to the notes, which are set in motion as soon as the small copper or brass hammers connected with them come opposite to the holes in the governing paper-roll, and establish a current. Thus, every note marked by a hole in the paper-roll sets to work and animates an electro-magnetic coil, which raises the wooden lever and makes the note speak. Other details of contrivance work the pedals; and buffers so as to give the necessary intonation to the instrument have been adapted.

THE NORTH OXFORDSHIRE ARCHÆOLOGICAL SOCIETY.

THIS Society had, on the 24th ult., another of their pleasant gatherings. The churches visited were St. Leonard's, Ensham; St. Michael's, Stanton Harcourt; St. Mary's, Cogges; St. Mary's, Witney; and St. Kenelm's, Minster Lovell; three of these cruciform, with a tower in the centre; the other two without transepts, but not without aisles, and with a tower at the east end of north aisle. The party were met at Ensham by the vicar, the Rev. W. G. Bricknell, and at once led to the church, and thence to the old abbey, the vicar being the leader of the party. Stanton Harcourt was next visited, and the incumbent was the guide through the church and the old manor-house. Thence the party went to Witney and afterwards to Cogges, through the fields, receiving attention from the incumbent and his family. Returning to Witney, and having lunched, the party visited the church, after which they proceeded to Minster Lovell Church and the priory ruins. Returning to Witney, a visit was paid to the Museum, under the guidance of Mr. Perdue and a clergyman.

THE FAIRFORD WINDOWS COMMITTEE.

AT a special council of the British Archæological Association on Thursday, the 3rd, Mr. Godwin, V.P., presiding, the following were appointed a committee for ensuring the illustration and preservation of these windows:—Earl Bathurst, president of the association; the vice-presidents, officers, and council of the association; the Rev. D. T. Rice, M.A., vicar of Fairford; the Ven. T. Thorpe, archdeacon of Bristol; the Rev. Canon Powell, vicar of Cirencester; the Rev. Canon Howman; Mr. Tom Taylor; Mr. B. B. Woodward, F.S.A., librarian to the Queen at Windsor; Mr. G. W. Reid, print department British Museum; and Mr. J. D. T.

Niblett, M.A., F.S.A.,—all of whom have consented to act. It was resolved to invite other persons distinguished in art to join the committee, including the presidents of the Royal Academy, Society of Antiquaries, Institute of Architects, and the Archæological Institute. A "Fairford window account" has been opened at the National Bank, Charing-cross, and some subscriptions are already paid. The honorary secretaries of the association—Mr. F. Levien, M.A., F.S.A., and Mr. E. Roberts, F.S.A.—act as honorary secretaries to the committee. The first work of the committee will be to obtain careful tracings of the whole of the windows with a view to the exchange of portions wrongly placed.

FROM SCOTLAND.

Crieff.—The new bridge across the Earn at Crieff has now been finished at a cost of several thousand pounds. The building, which was erected under the superintendence of Mr. Alexander Hair, of Edinburgh, will afford accommodation for all descriptions of vehicles, besides a broad footway on the east side for pedestrians. It contains four arches extending to a span of 42 ft. each, and the parapets are fully 100 yards in length.——It appears that efforts are being made for the erection of a new hospital in Crieff for the benefit of the poorer classes.

CHURCH-BUILDING NEWS.

Brampton.—The old church, Brampton, has been restored and re-opened. The roofs of the nave and south aisles were unsafe from decay, as well as the walls of the clearstories, owing to the original stone pillars and arches on each side of the nave having been taken out and substituted by elliptical arches of wide span and inferior material. The whole of these and the chancel arch have been restored, together with the clearstory and south aisle windows, which were divested of their mullions and tracery heads, and converted into square elongated openings to afford light to the galleries, of which useless encumbrances the church contained four. The whole of the windows have been reglazed with cathedral tinted glass, the floor of the church lowered to its original level, and fitted with benches instead of the wooden box pews. The tower has been thrown open to the church, and is now provided with seats for children; the belfry staircase has been built outside as originally, and all the masonry inside the church has been repaired and cleaned. The outside walls of the church and tower have been pointed, and a new vestry built; and the church has been warmed by hot water by Messrs. Oliver & Co., Chesterfield. It is the intention of the Duke of Devonshire to restore the chancel. The cost of the restorations is about 1,000*l.* The works have been executed by Mr. Marriott, of Staveley, builder. Mr. S. Rollinson, of Chesterfield, was the architect employed.

Llanfair Caerlinion, Welshpool.—The new church here, which has been rebuilt as far as possible upon the old foundations, consists of nave and chancel, north aisle, vestry, and south porch; and, when the tower (the base of which alone remains) is carried up and thrown open to the church, will provide accommodation in open seats for 427 persons, including children. Every interesting feature from the old church has been carefully preserved. The Transitional south doorway has been restored and re-set; the font repaired and provided with a cover; and the recumbent figure of Einion replaced in the chancel. The old oak roof, having been repaired, is now refixed over the nave and chancel. The north aisle and vestry roofs are new. The chancel is marked internally by a low stone screen, and provided with prayer desk and stalls. The pulpit of stone, with marble panels, &c., stands on the south side. The floor within the altar rails is laid with encaustic tiles from Maw & Co.; the slab at the back of the altar table is also inlaid with majolica and other tiles. The windows, with the exception of that next the pulpit, which is filled with Messrs. Heaton & Co.'s glass, are glazed with thick green cathedral glass (the east window being arranged in geometrical patterns, &c.) by Messrs. Dove & Davies, of Shrewsbury. Local blue stone is used for the walling, and red Shelooke for dressings to windows, &c. The work has been carried out at the cost of about 1,900*l.*, by Mr. R. Lloyd, builder, Welshpool, under the direction of the architect, Mr. E. Haycock, junior, of Shrewsbury.

Llandysilio.—The new church at Llandysilio has been consecrated. By the time the edifice is quite completed it will have cost 2,220*l.*, the contract for the building itself being 1,775*l.*, the residue being required for extras, and nearly the whole amount has been subscribed. The church, which is a Gothic structure, built of Welshpool stone, with Cefn stone for dressings, is erected on the site of the old church, the area being extended. The bell-tower and steeple are at the west end: the steeple rises on a number of Gothic arches from the tower itself. The church is lighted by fifteen windows, full of tracery, the glass being of cathedral tint. On the south side there is an oak Gothic porch-entrance, supported on stone pillars, and seats. The buttresses around have Cefn stone dressings. The interior consists of a principal nave, 20 ft. wide by 80 ft. long, and a north aisle, 16 ft. wide by 80 ft. long. The chancel is approached by five steps, with an additional one to the altar. The reredos is of Caen stone, by Mr. Earp, of London. The choir is divided from the chancel by a stone screen. The seats are open. They are made of Baltic timber, varnished, and are capable of accommodating 300 persons, partly free. The roof is open, and is composed of Baltic timber, but not varnished. In the east end is a painted glass memorial window, by Messrs. Clayton & Bell, of London, the gift of Mr. J. J. Turner, and representing "The Resurrection and the Life." In the centre is "Our Lord and the Glory," and the other portion, "The Perpetual Intercession of our Lord." The arcade is composed of four stone pillars and arches of Cefn stone. The church has taken about eighteen months in the erection, and was built by Mr. J. Potter, of Welshpool, from plans of Mr. J. E. Street; and Mr. W. James, of London, was the clerk of the works.

St. Anthony's (Diocese of Durham).—The church recently erected at St. Anthony's, has been consecrated. The edifice, as at present built, consists of a chancel, 30 ft. by 22 ft.; a nave, 63 ft. by 24 ft. 6 in.; with a south aisle, 10 ft. wide; and an organ chamber and vestry. The arches for a north aisle, to be hereafter erected, are built complete, and a temporary wall encloses them within the church. The accommodation at present provided is for 360 persons. It is intended to build a steeple above the organ chamber as soon as the funds will permit; the foundations having been specially prepared to support this additional weight. The architects, Messrs. Austin & Johnson, of Newcastle, have designed the building in the Early Pointed style of architecture, and it is constructed, both outside and inside, of red bricks, with some bands of darker bricks internally. The roof is covered with sea-green Westmoreland slates. The choice of the materials was influenced a good deal by the locality, as it was felt that the ordinary local stone so soon becomes black and unpleasing in appearance, and that the common Welsh slates are open to the same objection. The east window of three lights is placed very high in the wall, and below it there is a reredos of Caen stone and tiles. The chancel has a pavement of encaustic tiles, by Maw & Co. The chancel arch, and the arches separating the nave from the aisles, are acutely pointed, and spring from the pillars without any capitals—a local peculiarity observable in St. Nicholas and other of the Newcastle churches. In the west end of the church there are two two-light windows, with a rose window in the gable above them. The seats throughout are low and open, and of Vancouver's Island deal. The church is heated by hot water, and lighted by gas standards and a corona in the chancel. These fittings are the work of Mr. John Davy, of Manchester. The other contractors are Messrs. Potts & Moat, masons; John Irving, joiner; E. Beck, slater; H. Watson, plumber; and Wilson & Romanis, painters. All these tradesmen are Newcastle men.

Hastings and St. Leonard's.—St. Paul's Church, for the north-eastern part of St. Mary Magdalen, has been opened for divine service. The contract price for walls and roof exceeds 12,000*l.* The character of the interior fittings is said to warrant the assertion that the expenditure cannot be less than 20,000*l.*; and there is yet a lofty spire to be added to the tower of 82 ft. The style adopted is fourteenth-century Gothic. There are a nave, north and south aisles, chancel, chancel aisle, and chancel apse; also north and south porches,—the former being the principal entrance. Arcades of four arches divide the nave from the aisle. The columns are of Tinos and Devonshire marble, alternately arranged. Above are clearstories, with quadrupled windows, divided by columns. The chancel is a mass of ornamentation,—floor, walls, and roof each being highly decorated. The chancel floor, which rises considerably above the ground-level of the nave, is laid in encaustic tiles. In the centre is a line of medallions, representing the Slaying of the Innocents; the Stoning of Stephen; the Beheading of St. Paul and St. James; and the Crucifixion of St. Peter. Within the communion are five other designs, of an allegorical character, connected with the Crucifixion, representing the lash, the ladder and rope, the lantern, nails, and hammer; the spear; and the heart, hands, and feet. The floor is entirely covered with coloured encaustic tiles, in various designs. The sedilia, in the southern wall, is in carved Caen stone, with shafts of Derby fossil. The different columns throughout the apse and chancel are of marble, either from the Isle of Tinos (Greece) or from Devonshire. The reredos is also of marble; and the side panels are inlaid with alabaster marble, in patterns. The apse windows are filled in with stained glass, by Messrs. Clayton & Bell, the central subject being the Crucifixion. The other compartments represent the Last Supper and other incidents in the life of the Saviour. The roof is groined, in brick and stone bands. The arches of the transept, sacrarium, &c., are moulded, and exhibit some carved angels' heads. The pulpit is constructed in alabaster, with green marble panels, divided by columns and capitals. Some inlaid work and carving are also shown. The organ is one by Mr. G. M. Holdich, of London. It is placed in the north chancel aisle. The walls internally are of dark red brick, with bands of tile work at intervals. The aisles, as high as the dado, to a level with the top of the seats, are lined with encaustic and plain tiles, in various patterns. The stalls for the choir (carved), and the sittings throughout, are of wainscot oak. The roof of the nave is of open timber work, stained. Under the western window is a tablet to the memory of the late Mr. William Gilliat, of East Hoathly, through whom the new church was principally erected. Sittings are provided for about 700 persons. Externally the walls are built of local blue-stone, with Bath stone dressings. The tower will form a prominent landmark. The architect of the new church is Mr. John Newton, of London. He has been represented by Mr. Geo. Walters, clerk of the works. The builders are Messrs. Jackson & Shaw, of London.

Blakenham.—The church of Little Blakenham has been restored. Both roof and walls were in a dilapidated condition. The edifice was filled with square pews, and the pulpit and reading-desk were both badly placed against the north wall. These defects have now been remedied, the pews replaced by benches. The south porch has been renewed, and a new oak door provided. In place of the old ceiled roof is a stained wooden roof. The east window, like the rest of the church, is very simple; it consists of three lights, and is wholly without ornamental tracery; on either side, however, of the window, is a recess, and on these more decoration has been laid than on any other part of the church. In each is a fresco, that in the southern recess being a *fac simile* of the painting, evidently hundreds of years of age, which occupied it previously to the restoration, but which it was necessary to obliterate in order to carry out the repairs. This represents St. John the Baptist holding in his left hand a book, with the lamb, &c., to which he points with his right, and on the scroll is written *Ecce Agnus Dei.* The style is quaint, and the old painting is reproduced. In the northern recess it was considered desirable to substitute a new subject for that which existed before the restoration, and the altar-piece of Magdalen College, Cambridge, has been copied, in style resembling the companion fresco on the opposite side, the subject being our Saviour bearing the cross, and on the scroll is inscribed *Ecce homo.* There is a similar picture on the sides of the easternmost window in the north chancel wall, and here the subject is supposed to be St. John receiving the bride. The alterations were carried out from plans prepared by Mr. F. Josselyn by Mr. Hewitt, of Ipswich.

Stoke.—Christ Church, Stoke, has been consecrated. The building was commenced in July, 1867, from a design by Mr. E. Christian, of London, the builders being Messrs. Swayne & Sons, Guildford. The total cost of the structure when

complete will be about 2,300*l*. The side walls are temporary, it being intended, when sufficient funds are raised, to have additional aisles at each side, with steeple, chancel, &c. The design is in the Pointed style. The church at present consists only of nave. The columns which carry the side arches are of polished Devonshire marble from Torquay. The caps are in Bath stone, carved. The arches consist of alternate layers of brick and Bath stone. The church is paved with 6 in. Staffordshire tiles, red and black. The sittings are open, of Oregon pine, varnished. The roof is of Memel fir, with tie-beams and king-posts. The ceiling is wagon-headed, in panels. The doors are of English oak, with scroll hinges. The western end of the building is finished with Bargate and Bath stone. The west-end gable is surmounted by a cross. The tiling of the roof alternates six courses of new and two of old plain tiles, with a crested ridge. The building is fitted with gas, with corona lights, the fittings being attached to the pillars.

Raglan.—Raglan Church, Monmouthshire, has been re-opened, after restoration. The Duke of Beaufort gave a donation of 600*l*., and also a piece of land for enlarging the churchyard; and the Duchess gave the pulpit, of carved oak. The chapel has been restored as nearly as possible to its former character. The cost of the whole restoration was 2,600*l*.

South Petherton.—The new cemetery belonging to this parish has been consecrated. The site was known as the Chapel Field, adjoining the road leading from Ilminster to Yeovil. Mr. J. M. Allen, architect, of Crewkerne, prepared the plans. The cost of the two chapels and a lodge, together with the laying-out of the grounds, was estimated at 1,500*l*. The land cost 200*l*. per acre—400*l*.; and the inhabitants voted the required sum, 1,900*l*., to be raised by rate. Mr. Bartlett undertook the carpentering, and Messrs. Gould & Hallett the masonry. The chapels are not exactly alike. That belonging to the church has a bell-turret and an octagon vestry. The windows are also somewhat different. Both chapels are built of local stone, with Ham stone facings, and have open roofs of stained deal. The floorings are tiled, and the fittings are of stained deal. The windows are filled with stained glass. The cemetery is enclosed by a wall of local stone, the pillars supporting the entrance-gates being of Ham-hill stone. A path of 4 ft. divides the consecrated from the unconsecrated portion. The ground has been levelled and turfed, and several fir-trees have been planted. The banks close to the walls are stocked with laurels.

ROMAN CATHOLIC CHURCH-BUILDING NEWS.

Staines. — The first stone of the proposed Church of St. Ignatius, at Sunbury, has been laid by the Roman Catholic Archbishop of Westminster, in the presence of a numerous assemblage of the laity, including many from London. A site of half an acre of freehold land has been given for the new church. Mr. Charles Buckler is the architect, and the builders are Messrs. Castle, of Sunbury, and Whittle, of Twickenham. The entire length, including the chancel, is 84 ft., and the width 24 ft. The style is Gothic.

STAINED GLASS.

Dethick Church.—The east window of the parish church of Dethick, co. Derby, has been filled with painted glass. The style of the church is Early English, and the window is composed of three lancet lights and tracery openings. The central light is occupied by the Crucifixion enclosed within a canopy, above which is seated our Lord in sovereignty surrounded by cherubim, and enclosed by conventional foliage and canopies. The side openings are filled respectively with Abraham's sacrifice and Moses lifting up the brazen serpent; these are enclosed within canopies, over which are angels holding scrolls with texts. A base of mosaic work, with inscription, forms the base of the general design. The window is from the works of R. B. Edmundson & Son, Manchester.

Whitchurch Church (Shropshire). — Messrs. Ward & Hughes, of London, have recently completed a stained glass window in this church. The architecture of the old fabric is of the Roman type; and it is a semicircular-headed window measuring 22 ft. 6 in. by 8 ft., on the south side that has been filled with painted glass of the sixteenth century character, treated with large sized figures, the costumes of which are executed with a view of representing the Biblical period. There are two subjects—that above the gallery is the meeting of Jacob and Joseph in Egypt. The subject below is the death-bed of Jacob. The ornamental portion is characteristic, and a jewelled border surrounds the whole.

The Brunel Window in Westminster Abbey.—One of the windows in the north aisle of Westminster Abbey has just been filled with stained glass, manufactured by Messrs. Heaton, Bayne & Butler, from the designs of Mr. Henry Holiday. It is placed there as a memorial of the late Sir Isambard Brunel, who died in 1859. The architectural framework consists of two tall lancet arches, surmounted by a quatrefoil opening in the head of the principal arch. The artist has filled the quatrefoil head with a Christ in glory, surrounded with hovering angels with censers. Each of the lower lights contains three subjects from the history of the Jewish Temple, and the lowest portion of each is occupied by two allegorical figures, those on the western side representing Fortitude and Justice, those towards the east Faith and Charity.

St. Saviour's, Eastbourne.—A stained glass window has just been erected in the chancel of St. Saviour's Church, to the memory of Benjamin and Mary Backhouse. It has been erected at a cost of about 200*l*. The subjects represented are from the closing scenes in our Saviour's life. The work has been executed by Messrs. Clayton & Bell, of London.

Books Received.

Sussex Archæological Collections relating to the History and Antiquities of the County, published by the Sussex Archæological Society. Vol. XX. (Vol. viii. of Second Series). George P. Bacon, Lewes. 1868.

THE active and prosperous Sussex Archæological Society have issued another of their interesting and well-edited volumes. It contains papers on Midhurst, Glynde, Cowden, and East Grinstead; on the Buckhall at Cowdray; on Mural Paintings in Plumpton Church; Memorials of the "Lady Percy" of Shakspeare, and her husbands, Hotspur and Camoys; and a variety of others.

VARIORUM.

"The History of the Borough, Castle, and Barony of Alnwick," with numerous illustrations. By George Tait, F.G.S., &c. Alnwick: Blair. 1868. Vol. II. Part I. We have already favourably noticed the issue of this History of Alnwick. The author is a distinguished local antiquary and archæologist, and the chief discoverer of those curious rock sculptures of Northumberland of which the readers of the *Builder* have before heard. The present part of Mr. Tait's history contains full historical accounts of Alnwick Abbey, Holn Priory, St. Michael's Church, and various other Alnwick edifices; the Chantry of St. Mary and Grammar School, the Scientific and Mechanical Institution, &c., besides a portion of the appendix to the work, and a variety of illustrations of local edifices and antiquities.——"A Guide to the Geology of the Yorkshire Coast." By Martin Simpson, Lecturer and Curator. London: Whittaker & Co. 1868. The Yorkshire coast is a capital field for young geologists as regards the secondary strata, and the overlying drift which has so much increased in interest of late years. The Scarborough and Whitby museums are good schools of illustration also to the geological student of the Yorkshire coast. The Guide under notice is illustrated by sections of the strata, and seems to be a useful little book for local visitors with a turn for geology.

Miscellanea.

THE PRESIDENT OF THE INSTITUTE OF ARCHITECTS.—The proposed portrait for the Institute of Mr. Tite, M.P., is to be painted by Mr. J. P. Knight, R.A. It will be uniform in size with that of the late Professor Cockerell now in their rooms.

ENGLISH CHURCH AT HOMBURG.—The Bishop of London has consecrated the new church erected for the English at Homburg. The church holds fully 600 persons.

MEMORIAL OF LEIGH HUNT.—The suggestion of Mr. S. C. Hall that a memorial of Leigh Hunt should be set up in Kensall-green Cemetery, where he is buried, is about to be carried out. A number of well-known men have agreed to act as a committee. Mr. Durham, A.R.A., has made progress with a bust of the writer which, with a fitting pedestal, will form the memorial, and a certain amount of money has been subscribed. About 70*l*. more are required, and some of our readers will probably be glad to assist in raising this.

THE LONDON LABOURERS' DWELLINGS SOCIETY (LIMITED).—The fourteenth half-yearly meeting of the members of this society has been held, Mr. Richard Foster in the chair. The directors presented their report for the six months ending June 30th, which was adopted, and the usual dividend, at the rate of 5 per cent. per annum, free of income-tax, was declared. The capital of the society now amounts to 33,400*l*. They have purchased twenty-eight small houses in Prospect-place, Rotherhithe, and commenced a block of buildings at Vauxhall.

PALACE OF FINE ARTS FOR VIENNA.—A Vienna letter gives an account of a ceremony which has just occurred in that city on laying the first stone of a Palace of the Fine Arts. The Emperor, after signing the foundation Act, fixed the first block in its place, while the Society of Orpheonists sang a chorus of Mendelssohn. His Majesty before leaving visited the Exhibition of German Art, and spent some time examining the paintings. The city of Vienna also organised a banquet in honour of the German artists, who were holding their tenth meeting.

FIRES.—In Southampton Docks the most valuable part of the Royal Mail Company's factory, and part of an adjoining sugar-house, have been destroyed by fire, originating in a carpenter's shop belonging to the factory.—— An extensive cooperage in Vaudries-street, Liverpool, has been destroyed by fire.——A large farmyard at Bulley, in Gloucestershire, filled with wheat ricks, vetches, &c., a barn filled with wheat, a second filled with vetches, and outbuildings with agricultural implements and machinery, have all been destroyed by fire, originating, it is believed, in the accidental fall of the ashes of a cigar on short straw covering the dung in the yard.

PROPOSED TRADE SCHOOL FOR BIRMINGHAM.—At the request of the committee of the Birmingham Midland Institute, a conference of the principal manufacturers in the town has taken place, to consider the propriety of establishing a trade-school similar to that in Bristol. The proposal was warmly received, and on the motion of the mayor it was resolved that such a school be established in connexion with the Midland Institute. Half a dozen of the largest manufacturers have entered their names as subscribers, and their efforts are supplemented by donations from other gentlemen who always forward movements of this kind. About 250*l*. is the sum wanted to fit up the rooms now lying idle at the Institute, and 300*l*. or 400*l*. a year will defray the current expenses. Once established, the school may be expected to prove self-supporting.

THE NEW THEATRE ROYAL, CROYDON.—This new theatre has been opened with an equestrian entertainment. The exterior of the theatre has no pretensions to architectural beauty, the frontage being of plain red brick with stone copings. Part of the outward walls incloses a public market. The theatre proper is about 54 ft. wide by about 100 ft. deep, the proscenium being nearly midway between the walls. The stage is so constructed that it may be entirely removed when the space occupied thereby is required to be used for horsemanship or other purposes. The auditorium consists of fifteen private boxes, similarly placed to those behind the balcony stalls at the New Adelphi; 100 box seats, and 50 balcony or dress-circle seats; and a spacious pit and gallery. The decorations partake of the characteristics of the Greek order, but quite simple. In consequence of the peculiar shape of the ground, the architect (Mr. T. T. Smith) had some difficulty to contend with in the appropriation of space. The architect has been assisted in the work of decoration by Mr. Dillon; and the construction of the building has been carried out by Mr. Hutchinson.

THE INTERNATIONAL CONGRESS OF WORKMEN.—The third congress of the International Association of Workmen opened on Sunday at Brussels. The subjects of discussion were eight. Strikes and councils of arbitration being among them. The English and American workmen introduced the subject of shortening the hours of labour; the Germans asked what ought to be the attitude of workmen in case of a conflict between the great European Powers; the Belgians offered "a *résumé* of the special grievances of the workmen of each profession."

THE ADELPHI SCHOOLS IN SHOREDITCH.—An effort is being made to raise a fund to defray the expenses of enlarging the Adelphi Chapel Schools, in Gloucester-street, Hackney-road. The Council of Education gave notice to the managers that they should either dismiss one-third of the children or provide a more commodious building. Having sought in vain for a suitable site at a reasonable price, the managers decided on the addition of another story to the existing premises, merely providing an increased school accommodation of 50 per cent. The cost of this addition, with other necessary improvements, has been estimated at about 500*l*., and the committee solicit the practical sympathy of friends of education and Christianity throughout the metropolis to aid them in their efforts. In the daily schools there are at present over 400 children; and in the Sunday schools the reare over 500 on the books.

SOCIAL SCIENCE CONGRESS. — The arrangements for the meeting in Birmingham, under the presidency of the Earl of Carnarvon, are proceeding satisfactorily. A guarantee fund has been subscribed, and much good spirit shown in the town. The Mayor has announced his intention of inviting the members of the Association to a *soirée* in the Town Hall, which will take place on Thursday, October 1st; and a second *soirée* will be given on Monday following, the expenses of which will be borne by the local fund. The Earl of Dudley has offered the members of the Association an opportunity of seeing the Dudley caverns, and proposes to illuminate them for that purpose. The Congress commences at Birmingham on Wednesday, the 30th inst., when the opening sermon will be preached in St. Philip's Church by the Bishop of Worcester, and the inaugural address will be delivered in the Town Hall in the evening by the Earl of Carnarvon.

THE MEMORIAL TO LORD HERBERT.—The memorial committee to whom the superintendence of the Herbert Sea-side Convalescent Home erected at Bournemouth by the liberality of friends and admirers of the late Lord Herbert was entrusted, have issued their first annual report. The home has been handed over, free of debt, to the governors of the Salisbury Infirmary, the chairman of the committee, the Right Hon. T. Sotheron Estcourt having generously paid the sum of 2,000*l*., the balance against the committee; and the expense of furnishing the home has been met by the receipt from Lady Herbert of nearly 400*l*., the balance in hand after closing the establishment at Charmouth. The home, which was opened for the reception of patients on the 1st of October last, has already been attended with great success, 128 patients having been admitted in ten months, and disposed of as follows:—Sent home recovered, 71; much improved, 20; too ill to be benefited, 4; transferred to hospitals, 3; died, 1; remaining in the house, 29; total, 128.

SMOKE FROM RAILWAY LOCOMOTIVES.—At Tadcaster, on Tuesday, the 1st instant, before the West Riding magistrates, a case of some public interest was mentioned. Birbeck Forrest, a police constable, had laid an information under the 8th & 9th Vic. cap. 20, sec. 114, against the North Eastern Railway Company, for having, contrary to the section, emitted smoke from one of their locomotives on the 12th ult. The section referred to enacts that "every locomotive steam-engine to be used on the railway shall, if it use coal or similar fuel emitting smoke, be constructed on the principle of consuming, and so as to consume, its own smoke; and if any engine be not so constructed, the company or party using such engine, shall forfeit 5*l*. for every day during which such engine shall be used on the railway." Mr. Dale, of York, represented the company, but the charge was not pressed, on their undertaking that the offence should not be repeated, and agreeing to pay costs. There was a new Act passed last year with reference to this clause, which makes the act of the servant the act of the company.

MANCHESTER EXHIBITION OF WORKS OF ART.—The Exhibition of Modern Paintings and Works of Art at the Royal Manchester Institution was opened to the public on Thursday, the 10th instant.

OPENING OF THE NEW THOROUGHFARE FROM LONG-LANE TO FARRINGDON-ROAD.—On Thursday in last week the new roadway which passes in front of the new meat and poultry market was opened for traffic. The street has been lowered to suit the market level, so that in front of some four houses in Long-lane they will have to go up some two or three steps to get into their shops.

DEMOLITION OF CLEMENT'S INN.—The demolition of Clement's-inn, at one time an inn of court, but now a place of little mark, has commenced, to give room for the New Law Courts. Mr. Glasier, instructed by her Majesty's Commissioners of Works, sold by public auction all that portion of the inn which extends from the porter's lodge, just inside the gate, at the south end near the Strand, to the wall at the north end, and as soon as it was disposed of the process of demolition and removal commenced.

EXHIBITION OF HISTORIC PORTRAITS IN PARIS. A society of literary men, who hold conferences on the Boulevard des Capucines, have occupied their rooms during the off-season with a collection of portraits of notable persons of the time of the Revolution and of the Empire. The collection is not large, including only seventy-two works, and many of these of little artistic merit; but it is interesting, and the managers have set a good example. The admission is one franc, but each visitor receives a catalogue with annotations by two known writers.

THE DRINKING FOUNTAIN MOVEMENT. — A memorial drinking fountain is to be presented to Wigton by Mr. George Moore, of Whitehall. The memorial is intended to be in memory of the late Mrs. George Moore, of Whitehall. The site selected is the centre of the market-place, where three streets meet in the centre of the town. Mr. J. T. Knowles, of London, architect, attended a town meeting on the subject, and produced a plan of the proposed monument. It is square, 30 ft. in height, standing on a base of about 14½ ft. square, and will be built of various coloured granites, with sculptures in white marble on the four sides, and surmounted by a massive cross in bronze and gold. On each side are to be drinking fountains, with receptacles of water for dogs, horses, &c.

ENLARGEMENT OF THE POST-OFFICE. — The greater portion of the property required for the enlargement of the Post-office in St. Martin's-le-Grand, Bath-street, Newgate-street, and Angel-street, has now come into possession of the Postmaster General, under the provisions of the "General Post-office (Additional Site) Act, 1865," and the work of demolition has commenced. Workmen are busily engaged pulling down the houses numbered 74 and 75, Newgate-street. The Act gives power to the Postmaster-General to take properties and lands situated respectively in the parishes of Christ Church, Newgate-street; St. Anne and St. Agnes; St. Leonard, Foster-lane, Bath-street, and the intervening courts lying within the area of the block behind St. Martin's-le-Grand and Bath-street on the west.

TENDERS.

For rebuilding 5, Fashion-street, Spitalfields. Mr. H. H. Collins, architect:—

Cohen	£320 0 0

For the erection of dwarf boundary walls and entrance-gate piers, Twickenham Park, for Mr. William Budd. Mr. F. Warburton Stent, surveyor to the estate:—

Gascoyne	£810 0 0
Hill, Keddell, & Waldram	790 0 0
Nicholson	710 0 0

For extension of County Lunatic Asylum at Brentwood, Essex. Henry Stock (county surveyor), architect. Quantities by Mr. James Marsland and Mr. F. G. Widdows:—

Brown	£20,400 0 0
Hammond	20,215 0 0
Hart	19,998 0 0
Adamson	19,847 0 0
Perry & Co.	19,585 0 0
J. & F. Coleman	19,358 0 0
Ashby & Son	19,324 0 0
Wells	19,254 0 0
Brown & Robinson	19,130 0 0
Ennor	19,030 0 0
Webb	18,966 0 0
Hill, Keddell, & Waldram	18,580 0 0
Rider	18,560 0 0

For main drainage for the borough of Southampton, contract No. 3, for penstocks, &c., including fixing. Mr. James Lemon, engineer:—

Burton, Sons, & Waller	£392 0 0
The North Staffordshire Engineering Company	390 0 0
Hodgkinson	295 0 0

For mortuary for the parish of Marylebone. Mr. T. Gaul Browning (chief surveyor), architect:—

Jennings	£425 18 0
J. Brown	375 0 0
E. Brown	349 0 0
Crabb & Vaughan	345 0 0
Scrivener & White	334 0 0
Stevens & Watson	325 0 0
Tavener	311 0 0
Crockett	299 0 0
Turner	277 0 0
Temple & Forster	265 0 0

For villa residence, Chertsey, for Mr. J. Madocks. Mr. T. Wonnacott, architect. Quantities supplied:—

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